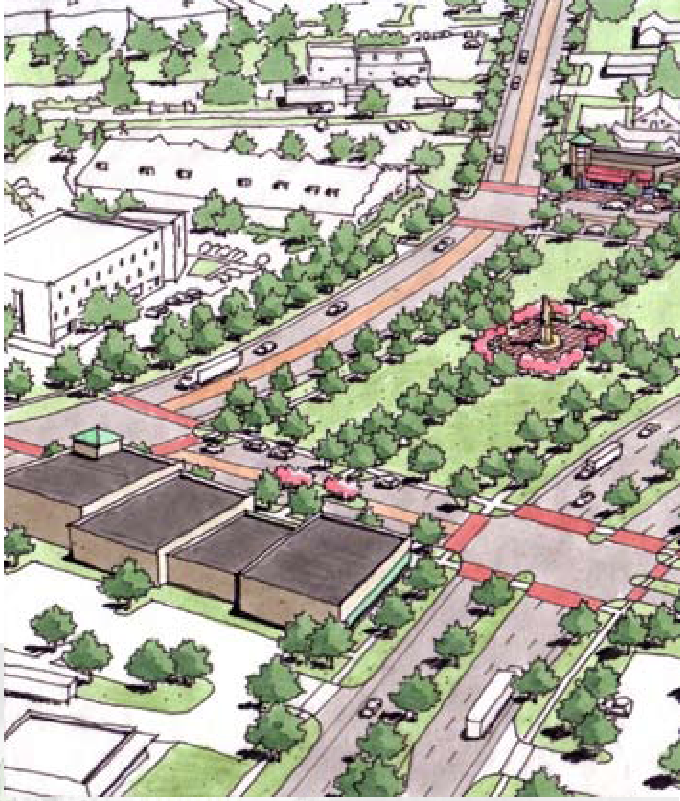

POTENTIAL STREET CONNECTION
FARM PRESERVE
ENTRY 160' AT RT 202 INTERSECTION
FRAME VIEWS WITH TREES CLOSE TO PARKWAY STREET WHILE BUFFERING FROM UNDESIRABLE VIEWS
REDUCE NEED FOR CUT AND FILL USING NATURAL GRADE AS GUIDE
TEXTURE INTERSECTION TO CREATE

November 2008

Route 31

Integrated Land Use and Transportation Plan

New Jersey Department of Transportation - Office of Smart Growth

Acknowledgements

Raritan Township
Jeff Mashall, Mayor
Jessie Lenagh-Glue, Planning Board Chair
James Humphries, Township Planner
Fred Coppola, Engineering

Flemington Borough
Mary Melfi, Borough Council
Erica Edwards, Economic Development

Hunterdon County
Nancy Palladino, Freeholder
John Kellogg, Director, Planning Board
Caroline Armstrong, Assistant Director, Planning Board
Les Varga, Transportation Planner, Planning Board
John P. Glynn, Director, Roads, Bridges & Engineering
James G. Martin, Engineer, Roads, Bridges & Engineering

Others
Bob Wise, Hunterdon County Chamber of Commerce
James Posakas, Flemington Raritan Business Association
Tara Braddish, Hunterdon Area Rural Transit
Tayna Jackson, Federal Highway Administration

New Jersey Department of Transportation
John Mole, Project Manager, Division of Project Planning and Development
Gary Toth, Director, Division of Project Planning and Development

Consulting Team
Urban Engineers
Glatting Jackson Kercher Anglin, Inc.

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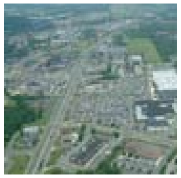
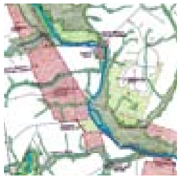
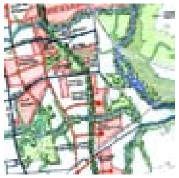
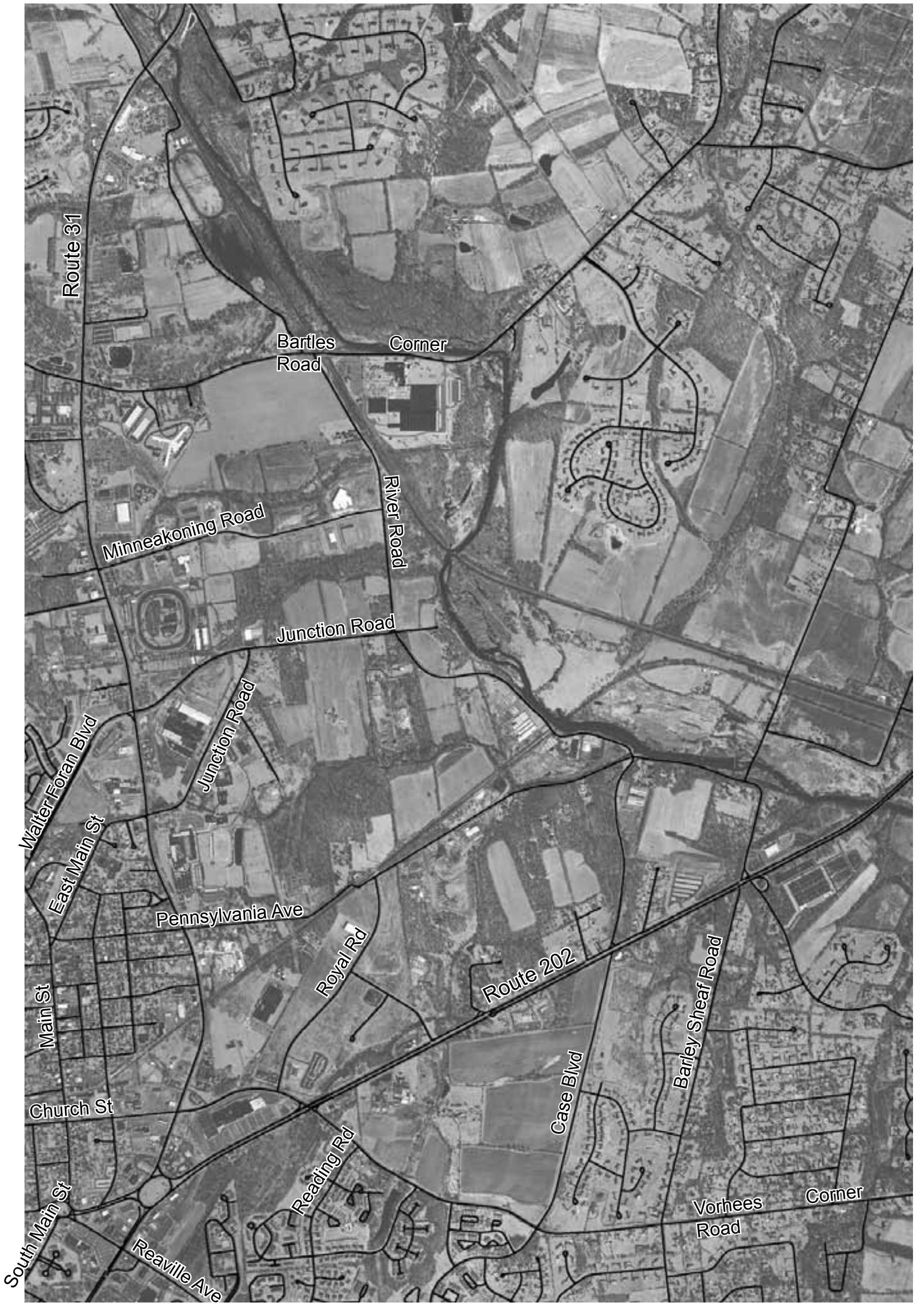






Section 1

Introduction



1.1 Context and Purpose for the Route 31 Study

Route 31 Congestion Mitigation

At the start of the study in late 2003, congestion on Route 31 in the Raritan Township/Flemington Borough area had been a growing concern for area residents, business owners, and elected officials for some time. A number of congestion mitigation alternatives had been studied by NJDOT since 1987, resulting in 1) modification of six intersections on existing Route 31 to include additional turning lanes (completed in 2004), 2) the proposed "elimination" of the Flemington Circle by grade separating the intersection of Route 31 and 202 (currently being re-designed for an at-grade solution), and 3) the proposed "Flemington Bypass", a 4-lane limited access highway from Route 202, east of Voorhees Corner Road to Route 31, just north of Bartles Corner Road (currently on-hold).

A Smart Growth Alternative

New Jersey's Smart Growth Council, consisting of state-wide departments and agencies including the NJDOT, has been tasked with ensuring that state-wide programs and projects are consistent with New Jersey's smart grown principles. This smart growth initiative, coupled with the high cost of the Flemington Bypass in the face of declining state road revenues, led the NJDOT to initiate the development of a "smart growth alternative" for the Flemington Bypass.

New Jersey Smart Growth Principles

Smart Growth is the term used to describe well-planned, well-managed growth that adds new homes and creates new jobs, while preserving open space, farmland, and environmental resources. Smart Growth supports livable neighborhoods with a variety of housing types, price ranges and multi-modal forms of transportation. Smart Growth is an approach to land use planning that targets the State's resources and funding in ways that enhance the quality of life for residents in New Jersey. (New Jersey Office of Smart Growth).

New Jersey's Smart Growth Principles include:

- Mixed land uses
- Compact, clustered community design
- Range of housing choice and opportunity
- Walkable neighborhoods
- Distinctive, attractive communities offering a sense of place
- Open space, farmland, and scenic resource preservation
- Future development strengthened and directed to existing communities using existing infrastructure
- Transportation option variety
- Predictable, fair and cost-effective development decisions
- Community and stakeholder collaboration in development decision-making

EMERGING THEM

1.2 The Process

The development of the Framework Plan is the result of a collaborative effort that included the staff and elected officials of the local jurisdictions (Flemington, Raritan Township, and Hunterdon County), property owners, general public, NJDOT, and other regional and state-wide agencies. The planning process included a variety of forums to engage these groups and stakeholders.

Advisory Group

An Advisory Group, also known as the Local Planning Committee (LPC), was formed that included representatives from NJDOT, Raritan Township, Flemington Borough, and Hunterdon County. This Advisory Group met regularly to provide direction and review the plan's progress. Specifically this group guided public and stakeholder involvement, identifying key stakeholders, public venues for discussion, and direction on local political and implementation issues that would need to be addressed.

As the project developed, smaller sub-groups were formed to address specific key issues related to the project. These groups included the following:

- Traffic Modeling Subcommittee
- Outreach Subcommittee
- Access Management Subcommittee

Initial Stakeholder Interviews

Study Area Property Owners

Brian Barbiche - 184 Pennsylvania Avenue
John Bowlby - Bass Transportation Co., Inc.
Jack Cust - HealthQuest
Gary Dean - Gary Dean Associates (Flemington Fairgrounds)
George Dilts - Dilts and Koester
Herbert Dvoor
Nat Gatlin - Good News Home for Women
Rick Kuhl, Jr. - Kuhl Corp. (Flemington Fairgrounds)
Scott Loventhal - Garden Properties (Flemington Fairgrounds)
Marion McLeod - 78 Junction Road (Mcleod Farm)
Gary Nagel - Hunterdon Care Center
Suresh Patel - Flemington Industrial Park
Robert Schenkel - Lincoln Realty Services (Lipton Property)
Don Shuman - Don Shuman Assoc. Inc
Arthur Stryker - Raritan Valley Disposal
William Vogt - Don Shuman Assoc. Inc.
Ted Resnick - Flemington Department Store

Environmental Resources

Beryl Doyle - Citizens for Parkland
Don Einhorn - South Branch Watershed Association
Jennifer Fisher - Raritan Township Environmental Commission
Doug Kiovsky - Hunterdon County Parks and Recreation
Ruth Prince - Raritan Twp. Planning Board
Kevin Richardson - Hunterdon County Open Space Trust Fund
Chris Testa - Hunterdon County Soil Conservation District

Historical Resources

Steve Hardegen - Historic Preservation Officer, NJDEP
Peter Kinsella, Raritan Township Committeeman; Raritan Township Local Historians Committee
Stephanie Stevens - Hunterdon Cultural & Heritage Commission
Richard Stothoff - Raritan Historic Preservation Committee
Karen Weber - Division of Environmental Resources, NJDOT

Community Resources

Glenn F. Barry - Hunterdon Central Regional High School
Kean Burenga - Black River & Western Railroad
Bill Clother - Hunterdon County Parks and Recreation
William P. Donnelly - Hunterdon Central Regional High School
Jack Farr - Flemington-Raritan School Board
Lawrence Grand - Hunterdon Healthcare System
Marty Hogan - Hunterdon Healthcare System
Ed McCaffrey - Hunterdon County Parks and Recreation
John J. Trontis - Hunterdon County Parks and Recreation
Ron Van Teyens - Hunterdon Central Regional High School

Other Stakeholders & Agencies

Byron Brisbee
Brenda DePugh - The LINK, Hunterdon County Department of Human Services
Donna Drewes - Municipal Land Use Center
Erica Edwards - Flemington Department of Community and Economic Development
Tanya Jackson-Emam - Federal Highway Administration
Mary Melfi - Flemington Borough Council; Hunterdon County Planning Board
Ron Tindall - North Jersey Transportation Planning Authority

Stakeholder Interviews

Individual and informal one-on-one interviews were conducted with area stakeholders in order to understand site specific development issues and local jurisdiction interests. These stakeholders included property owners, developers, local municipal staff, elected officials, and area-wide interest groups. Collectively the information gathered through these interviews provided a deep understanding of the study area, uncovering both opportunities and obstacles. In addition, these interviews provided a way to bring the stakeholders directly into the process, creating a dialogue in which ideas could be shared and tested.

Design Workshops

The development and testing of the Framework Plan was conducted in a series of Design Workshops held over 12-month period between 2004 and 2005. The Design Workshops were housed at public meeting facilities within the study area over several days allowing critical decision-making and information sharing. The purpose of the Design Workshops is to facilitate an on-site working "studio" allowing collaborative work sessions between the project team, NJDOT, the public, stakeholders, and the Advisory Group.

The Design Workshops included a variety of stakeholder interviews, team site visits, working sessions, public visioning sessions, and Advisory Group briefings. Over the course of these Design Workshops the Framework Plan was developed and tested. The "Framework Plan" and "Design Vision & Implementation Plan" documented in Sections 3.0 and 4.0 are the direct product of this workshop process.

Public Visioning Sessions

As part of the Design Workshops a public visioning session was held that provided interested citizens the opportunity to articulate their issues and concerns and have an informed dialogue about their future vision for the area. These sessions involved a briefing presentation on the analysis background of the projects and table design sessions where small groups formed to discuss issues, concerns and identify key goals and community character that should be protected.

Character:
- keep pastoral feel
- Want real historic quality
- Protect rural character and historic resources
- Do not want to be "urban"

Parks & Open Space:
- Want trees, walkability, bikeability
- Build trails to connect Flemington to the Raritan River
- Create more parks

Proposed Network:
- Abandoning original grade separated Flemington Circle project is good
- Need connections south of Route 202
- Network approach provides safe access between uses
- Will more roads cause more development??
- Need to deal with land use and development ordinances too
- How much will it cost? Who pays? How long will it take?

Coordination Efforts

Stakeholder Interviews
- June 2004
- January 2005
- Ongoing throughout the project with multiple area developers

Federal, State and Local Coordination
- ACM - January 2007
- Inter-Agency Coordination Meeting- Aug 2004
- Raritan Township Local Officials - July 2005
- Raritan Township, Flemington Borough, Hunterdon County, Aug 2005

Workshops
- Workshop #1 – May 2004
- Workshop #2 – June 2004
- Workshop #3 - May 2005
- Land Use Workshops - November 2005

Joint Raritan-Flemington Planning Board and/or Raritan Township Planning Board
- July 2005
- Nov 2005
- April 2006
- May 2006
- March 2005 (County Planning Board)

Project Status Meetings
- Monthly from October 2004 to April 2006

Advisory Group Meeting (LPC Meetings)
- June 2004
- September 2004
- January 2005
- March 2005
- November 2005
- ***Traffic Modeling Subcommittee Meetings***
  - Nov 2005
  - April 2006
- ***Outreach Subcommittee Meeting***
  - March 2005
- ***Access Management Subcommittee Meetings***

Other Key Meetings
- ***Flemington Raritan Business Association***
  - October 2004
  - May 2005

Organization of this Report

This report summarizes over four years of planning, analysis and implementation of a "smart growth alternative" for the Flemington Bypass. This effort included working corroboratively with the local jurisdictions to document their land use and transportation issues in order to develop a "Framework Plan". The Framework Plan represents an initial step toward an integrated land use and transportation plan, outlining new street connections, redevelopment opportunities, and open space protection within the context of local community goals and individual landowner actions.

This report is organized into the following sections:

1.0 Introduction – Sets the policy context for the study and outlines the planning process that went into the development of the Framework Plan.

2.0 Context – Describes the land use and transportation context of the Flemington study area.

3.0 Framework Plan – Illustrates the principles and key components of the Framework Plan.

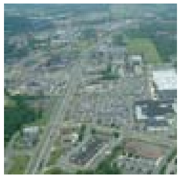
4.0 Design Vision & Implementation Plan – Outlines in greater detail key design aspects of the Framework Plan and its implementation.

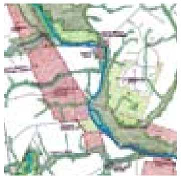
5.0 Potential Land Use Alternatives– Summarizes the development and evaluation of land use alternatives.

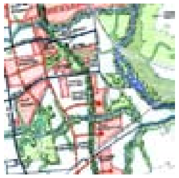
6.0 Traffic Analysis – Summarizes the technical analysis that went into testing and refining the proposed road network of the Framework Plan.

7.0 Implementation Initiatives – Highlights the number of "breakout" projects and on-going initiatives that have resulted from this study.

8.0 Lessons Learned – Summarizes the key things learned through the process that can be applied to other similar initiatives.

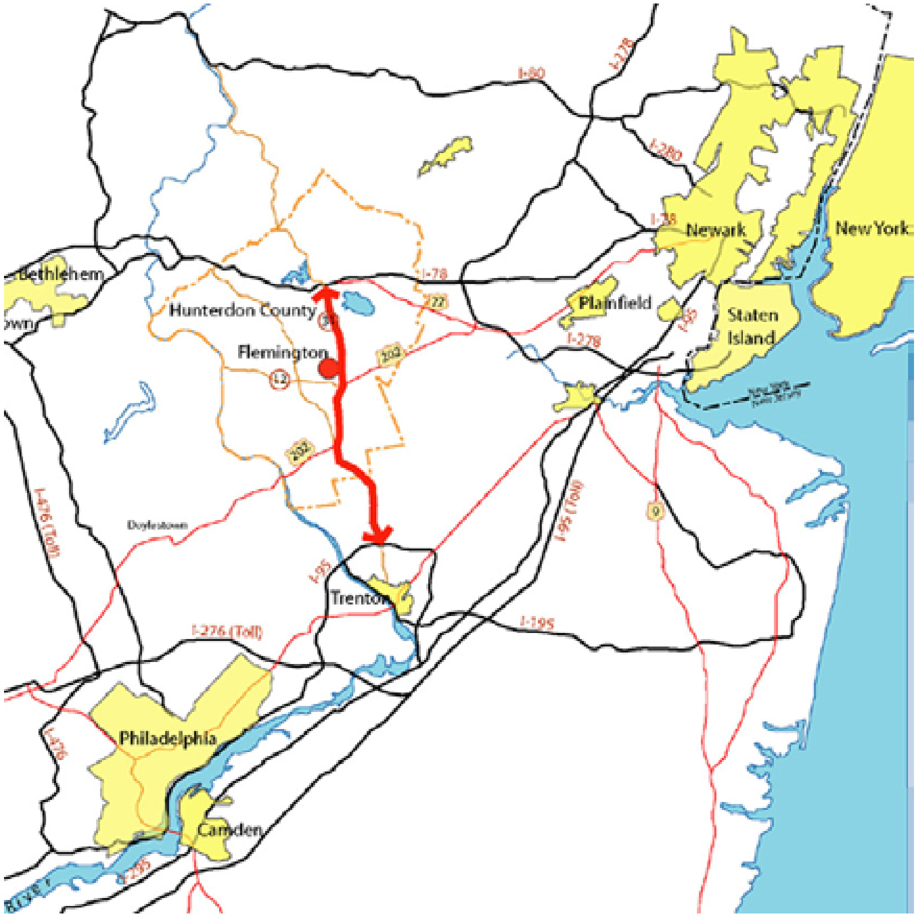






Section 2

Context

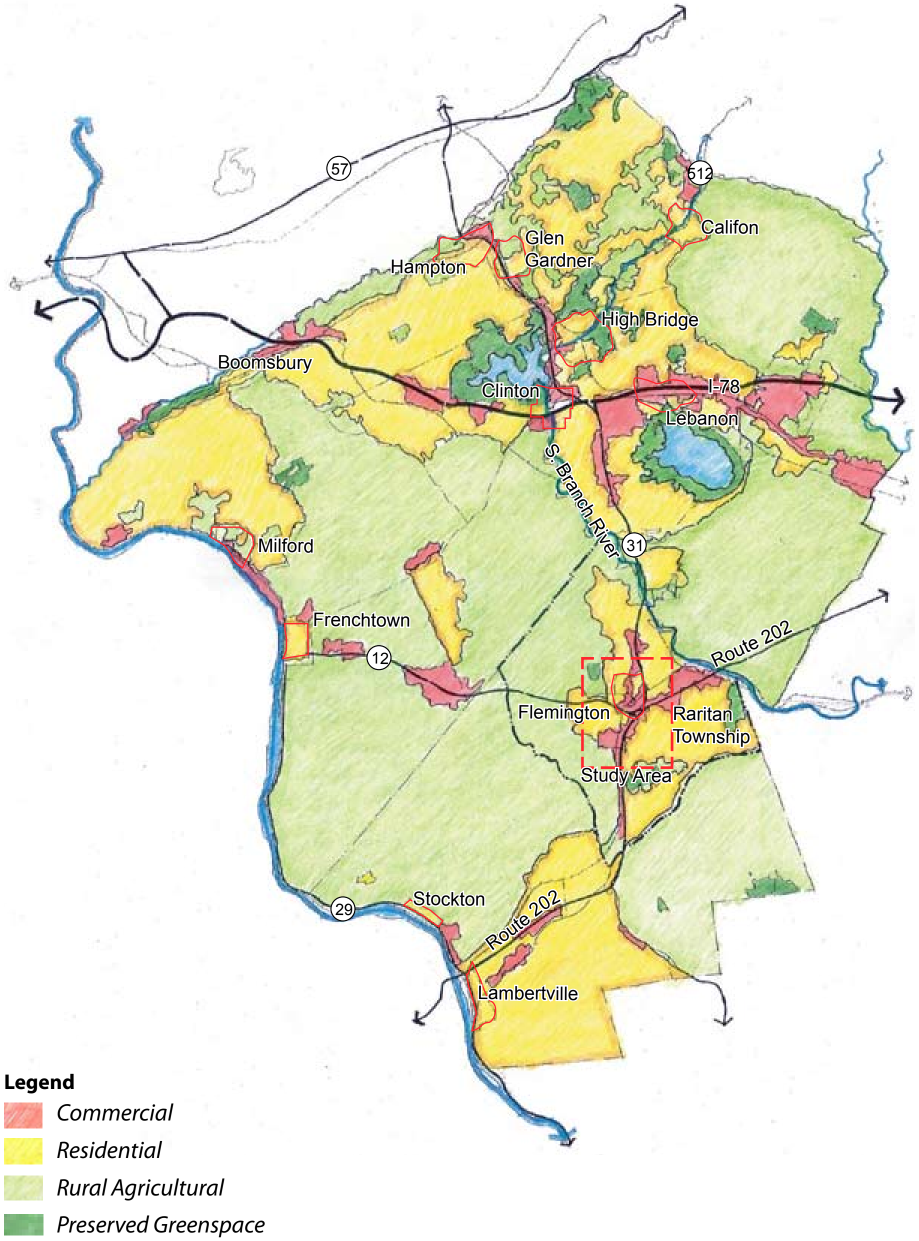

I-80
I-278
I-280
I-78
Newark
New York
Bethlehem
Hunterdon County
Plainfield
22
I-278
I-95
Staten Island
Flemington
12
202
202
I-476 (Toll)
Doylestown
I-95 (Toll)
9
I-95
Trenton
I-276 (Toll)
I-195
Philadelphia
I-476
Camden
I-295

2.1 Regional Context

New Jersey

Route 31 begins in Trenton and travels north through three counties in western New Jersey extending north to US 46. It is a key link between Interstate 78 in northern Hunterdon County, Route 202 in Raritan Township, and Interstate 95 just north of Trenton.

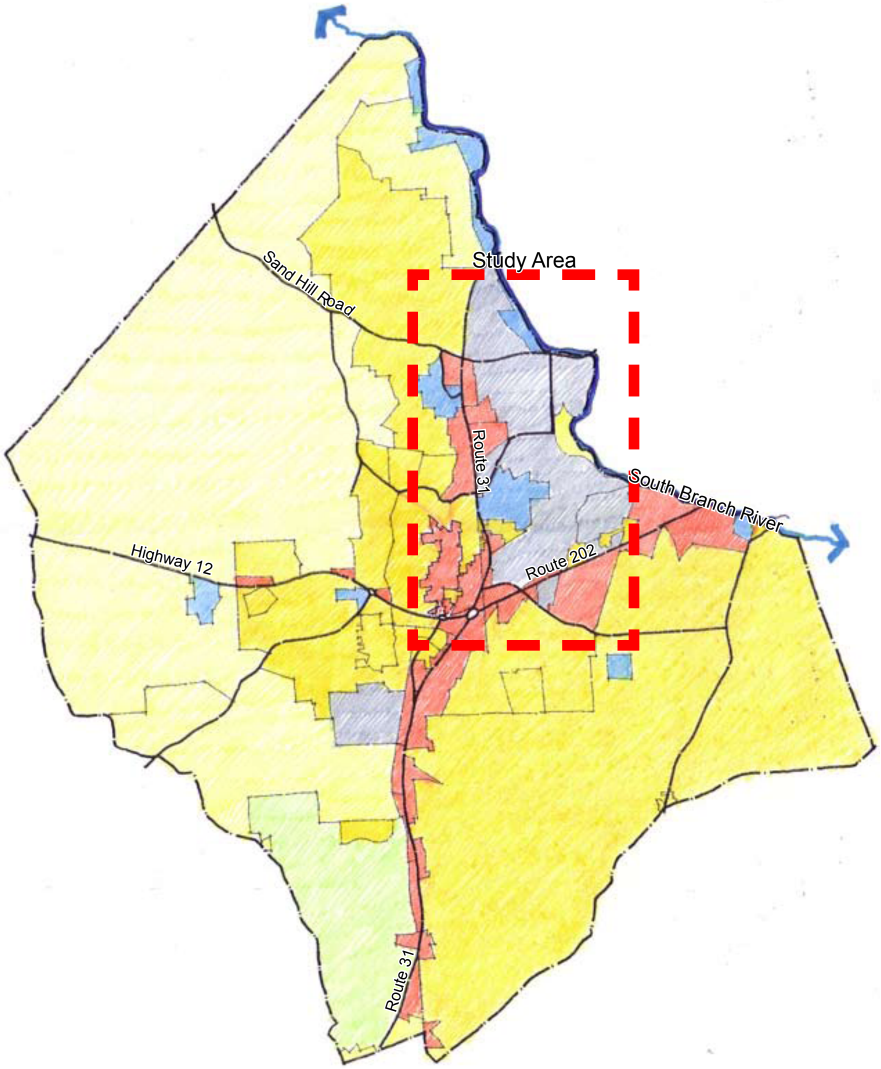
Hunterdon County, located about one hour from both the Philadelphia and New York metropolitan areas, has grown into a bedroom community. Route 31 helps serve this connection by providing one of the few regional north-south connections in this part of New Jersey, making it an attractive and important route for regional traffic.


57
Hampton
Glen Gardner
512
Califon
High Bridge
Boomsbury
Clinton
I-78
Lebanon
S. Branch River
31
Milford
Frenchtown
12
Route 202
Flemington
Raritan Township
Study Area
29
Stockton
Route 202
Lambertville
Legend
Commercial
Residential
Rural Agricultural
Preserved Greenspace

Source: Hunterdon County GIS

Hunterdon County

Historically, Flemington and Lambertville were Hunterdon County's main urban centers servicing a primarily rural and agricultural county. The Delaware and South Branch Rivers served as important transportation corridors for these early settlements. Today the county is balancing its agricultural past with its growing residential future. Roads like Route 31 and 202 have provided access for residential development to follow as the county's land use pattern clearly illustrates. The challenge is to manage this growth to protect the area's agricultural and cultural resources while creating valuable and sustainable communities.

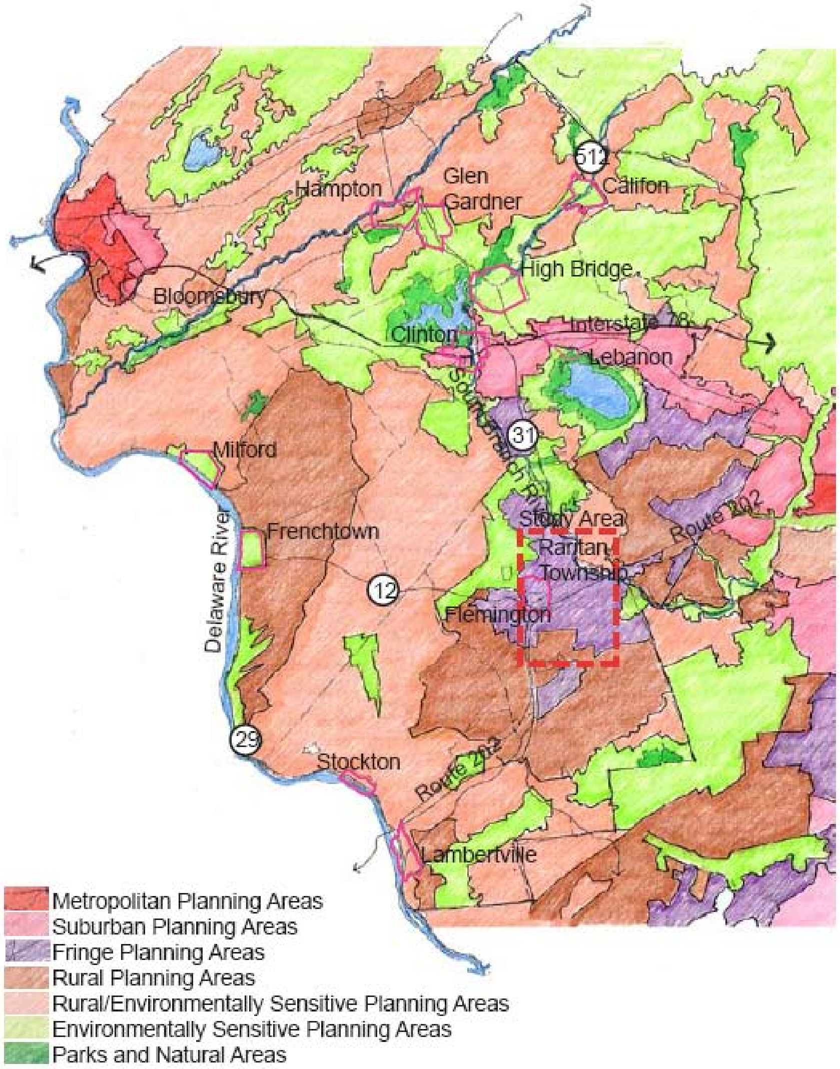

Study Area
Sand Hill Road
Route 31
South Branch River
Highway 12
Route 202
Route 31
Legend
Rural Residential
Residential
Agricultural
Institutional
Industrial
Commercial

Source: Raritan Township Zoning: 2002

Raritan Township & Flemington Borough

The Raritan-Flemington area has historically been the center of growth in the county, dating back to the time of the first European settlers in the early 1700s. Flemington, which is the Hunterdon County Seat and its oldest community, sits in the middle of Raritan Township. The South Branch River helped spur this early growth, serving as a vital transportation corridor. What is known today as Route 31, historically served as another important north/south transportation route from the area's rural farmlands to nearby centers of trade and commerce. Later, the development of railroad connections provided the area important access and served growing industrial development.

Today, Raritan Township is the most populous municipality in Hunterdon County, housing a growing suburban residential population. The Township's and the County's close proximity to the New York and Philadelphia metropolitan areas has made this area an attractive location for residential growth, and suburban commercial development has followed extending along major roadway corridors like Routes 31 and 202. Agricultural and industrial uses have diminished under this growing residential and commercial pressure.


Hampton
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512
Califon
High Bridge
Bloomsbury
Clinton
Interstate 78
Lebanon
31
Milford
Study Area
Raritan Township
Route 202
Frenchtown
Delaware River
12
Flemington
29
Stockton
Route 202
Lambertville
Metropolitan Planning Areas
Suburban Planning Areas
Fringe Planning Areas
Rural Planning Areas
Rural/Environmentally Sensitive Planning Areas
Environmentally Sensitive Planning Areas
Parks and Natural Areas

(Source : N.J. Preliminary State Plan DELTA MAP- Cross-Acc. III Hunterdon County)

The State Plan
Released in the spring of 2004, and currently in a state-wide review and cross-acceptance process, the State Plan categorizes five types of planning areas.

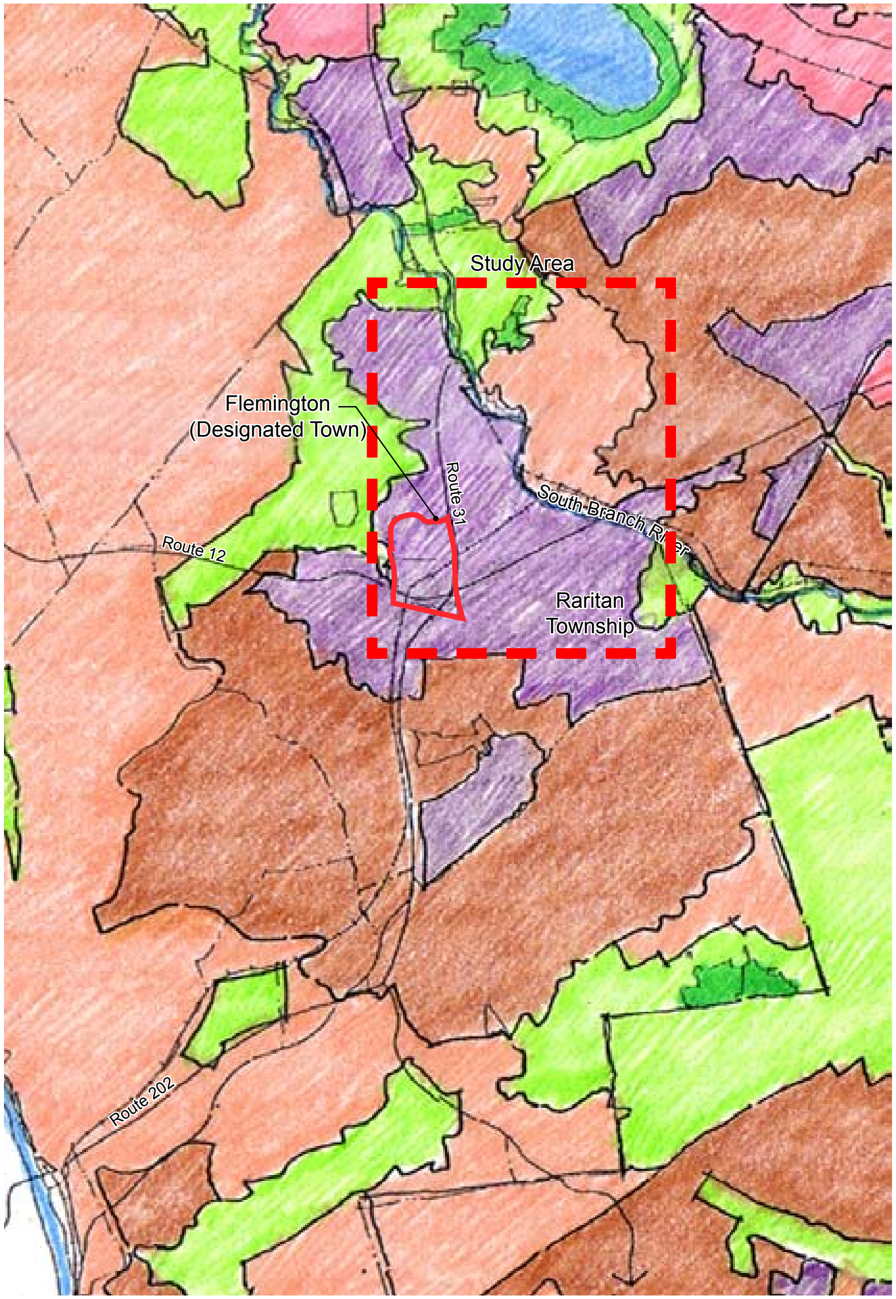
Metropolitan Planning Area: PA1- The state's future redevelopment areas which include the revitalization of cities and towns: promote growth in compact forms; stabilize older suburbs; redesign areas of sprawl; and protect the character of existing stable communities.

Suburban Planning Area: PA2- Promote growth in compact forms and centers while protecting the character of existing stable communities; protect natural resources; redesign areas of sprawl; reverse further sprawl and revitalize cities and towns.

Fringe Planning Area: PA3- Accommodate growth in Centers and revitalize cities and towns while protecting the natural environment and Environs as open lands; protect the character of existing stable communities; provide a buffer to Metropolitan and Suburban Planning Areas and less developed Rural and Environmentally Sensitive Planning Areas; and confine programmed sewers and public water services to Centers.

Rural Planning Area: PA4 and Rural/Environmentally Sensitive Planning Area: PA4B- Maintain large contiguous areas of farmland and other lands; revitalize cities and towns while accommodating growth in Centers and protecting its character; promote a viable agricultural industry; and confine programmed sewers and public water services to Centers.

Environmentally Sensitive Planning Area: PA5 and Environmentally Sensitive/ Barrier Islands Planning Area: PA5B- Protect environmental resources through the protection of large contiguous areas of land; accommodate growth in Centers while protecting their character; revitalize cities and towns; and confine programmed sewers and public water services to Centers



The State Plan & Raritan Township

The majority of the study area is classified as a Fringe Planning Area. A Fringe Planning Area is defined as a predominantly rural landscape that is not prime agricultural or environmentally sensitive land, with scattered small communities and freestanding residential, commercial and industrial development.

The intent of Fringe Planning Areas is:

1. Protect environment-culturally, as a resource and as a buffer to urbanized areas (a TDR in these areas would be effective)

2. Accommodate new growth ('Smart Growth') in existing centers or proposed centers (which includes sewer and public water services)

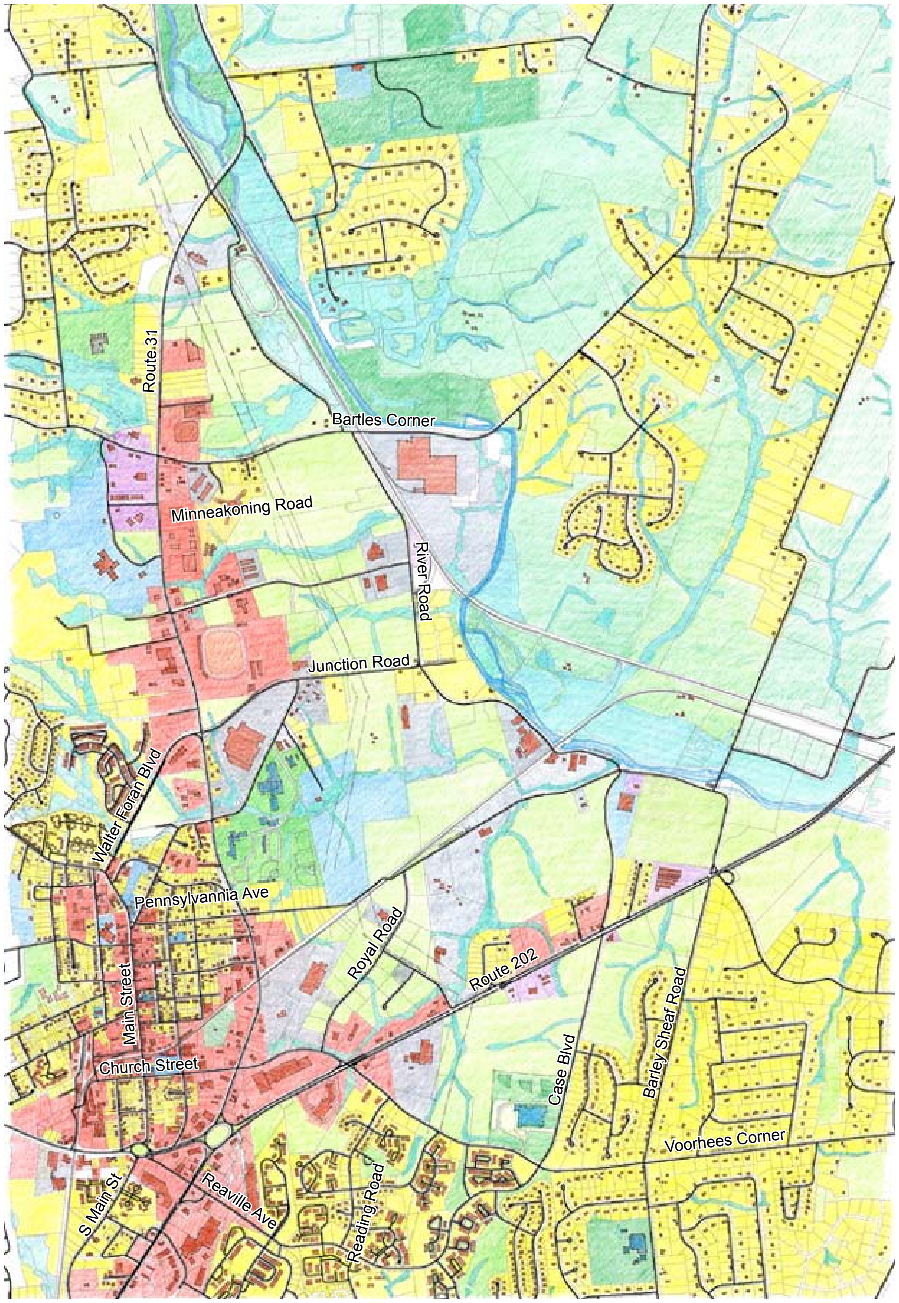
3. Protect the character of the area

4. Infrastructure, in centers, should be provided by the private sector except where joint public/private investment would benefit the public

Towns are the traditional centers of commerce or government throughout the state. They are relatively freestanding in terms of their economic, social and cultural functions. Towns reflect a higher level of investment in public facilities and services than their surrounding environs. They provide a core of commercial services adjacent to residents and provide employment in their regions.

🟥 Metropolitan Planning Areas
🟥 Suburban Planning Areas
🟪 Fringe Planning Areas
🟫 Rural Planning Areas
🟧 Rural/Environmentally Sensitive Planning Areas
🟩 Environmentally Sensitive Planning Areas
🟩 Parks and Natural Areas

(Source : N.J. Preliminary State Plan DELTA MAP- Cross-Acc. III Hunterdon County)


Route 31
Bartles Corner
Minneakoning Road
River Road
Junction Road
Walter Foran Blvd
Pennsylvannia Ave
Royal Road
Route 202
Main Street
Church Street
Case Blvd
Barley Sheaf Road
Voorhees Corner
S Main St
Reaville Ave
Reading Road

2.2 Site Analysis

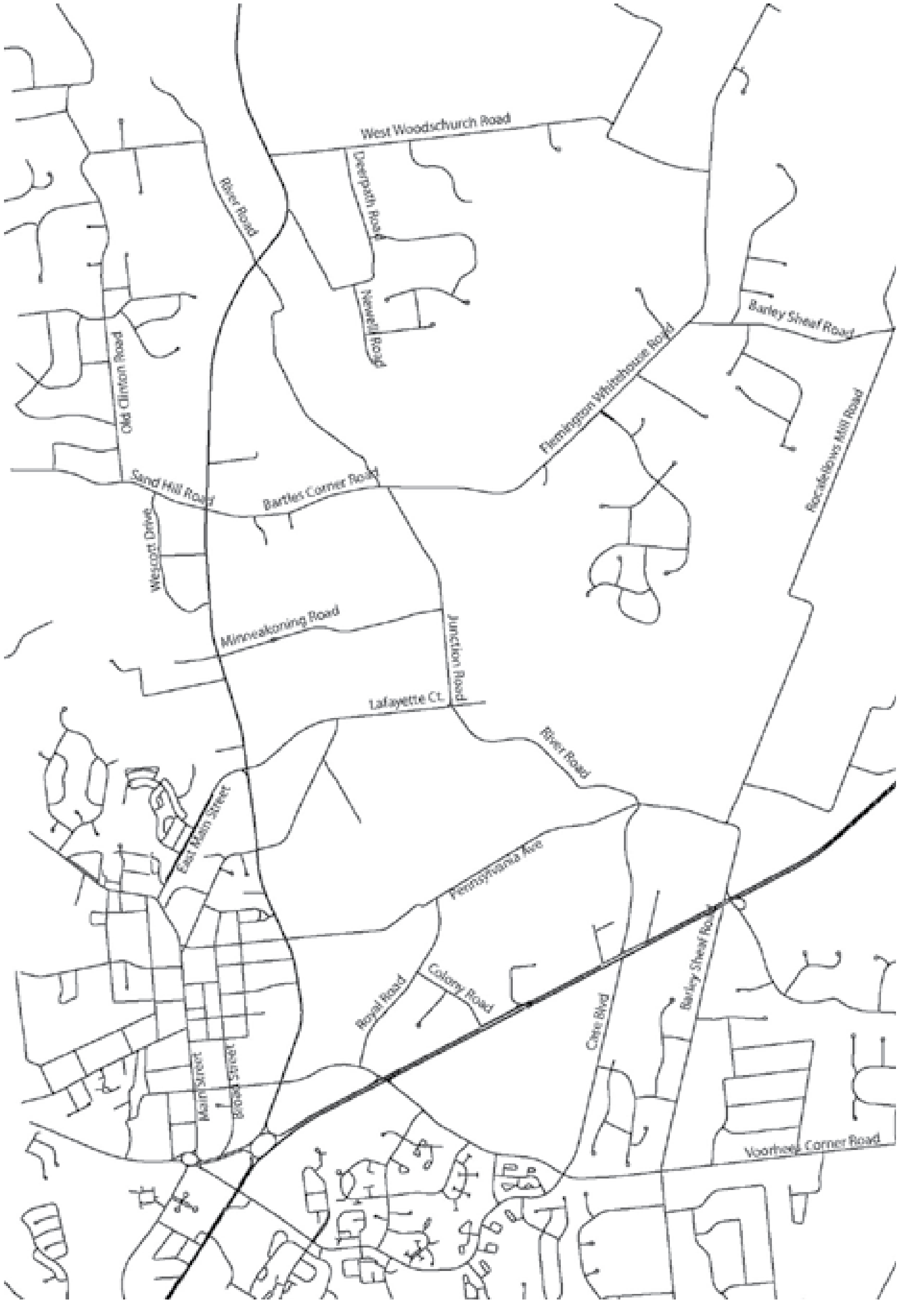
Existing Land Use

The existing land use illustrates a range of development patterns from the historic mixed-use grid pattern of Flemington, to the commercial strip development along Route 31 and 202, to the low density suburban residential development interwoven with existing farmland.

Conclusion:
Between Route 31 and the South Branch River there is a significant amount of undeveloped land under increasing pressure to develop.

Legend

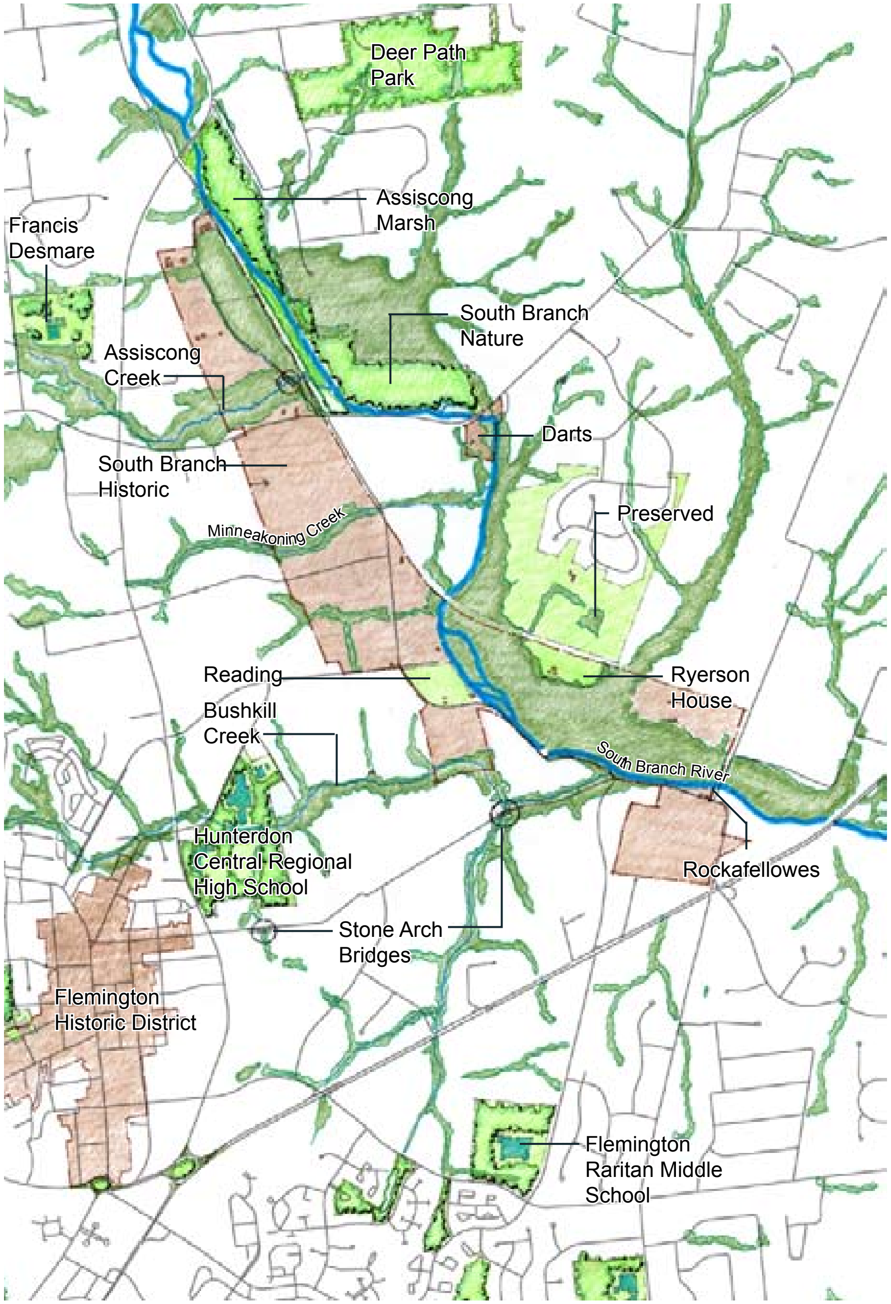
- 🟨 *Residential*
- 🟥 *Commercial*
- 🟦 *Institutional*
- 🟪 *Office*
- ⬜ *Industrial*
- ⬜ *Rural Agricultural*
- 🟩 *Undeveloped*
- 🟩 *Parks/Open Space Preservation*
- 🟦 *Wetlands*


West Woodschurch Road
Deerpath Road
River Road
Newell Road
Barley Sheaf Road
Flemington Whitehouse Road
Old Clinton Road
Sand Hill Road
Bartles Corner Road
Rockafellows Mill Road
Wescott Drive
Minneakoning Road
Junction Road
Lafayette Ct.
River Road
East Main Street
Pennsylvania Ave
Colony Road
Royal Road
Case Blvd
Barley Sheaf Road
Main Street
Bonnell Street
Voorhees Corner Road

Existing Transportation Network

The existing transportation network illustrates a range of patterns and densities including the historic grid pattern of Flemington, the suburban pattern south of Route 202, and the rural pattern east of Route 31. This "rural" street pattern east of Route 31, along with the changing land use patterns contributes to the area's traffic congestion as new land development is reliant on a limited network of streets.

Conclusion:
Additional street network will need to be added to effectively accommodate current and future development in the area.


Deer Path Park
Assiscong Marsh
Francis Desmare
South Branch Nature
Assiscong Creek
Darts
South Branch Historic
Preserved
Minneakoning Creek
Reading
Ryerson House
Bushkill Creek
South Branch River
Hunterdon Central Regional High School
Rockafellowes
Stone Arch Bridges
Flemington Historic District
Flemington Raritan Middle School

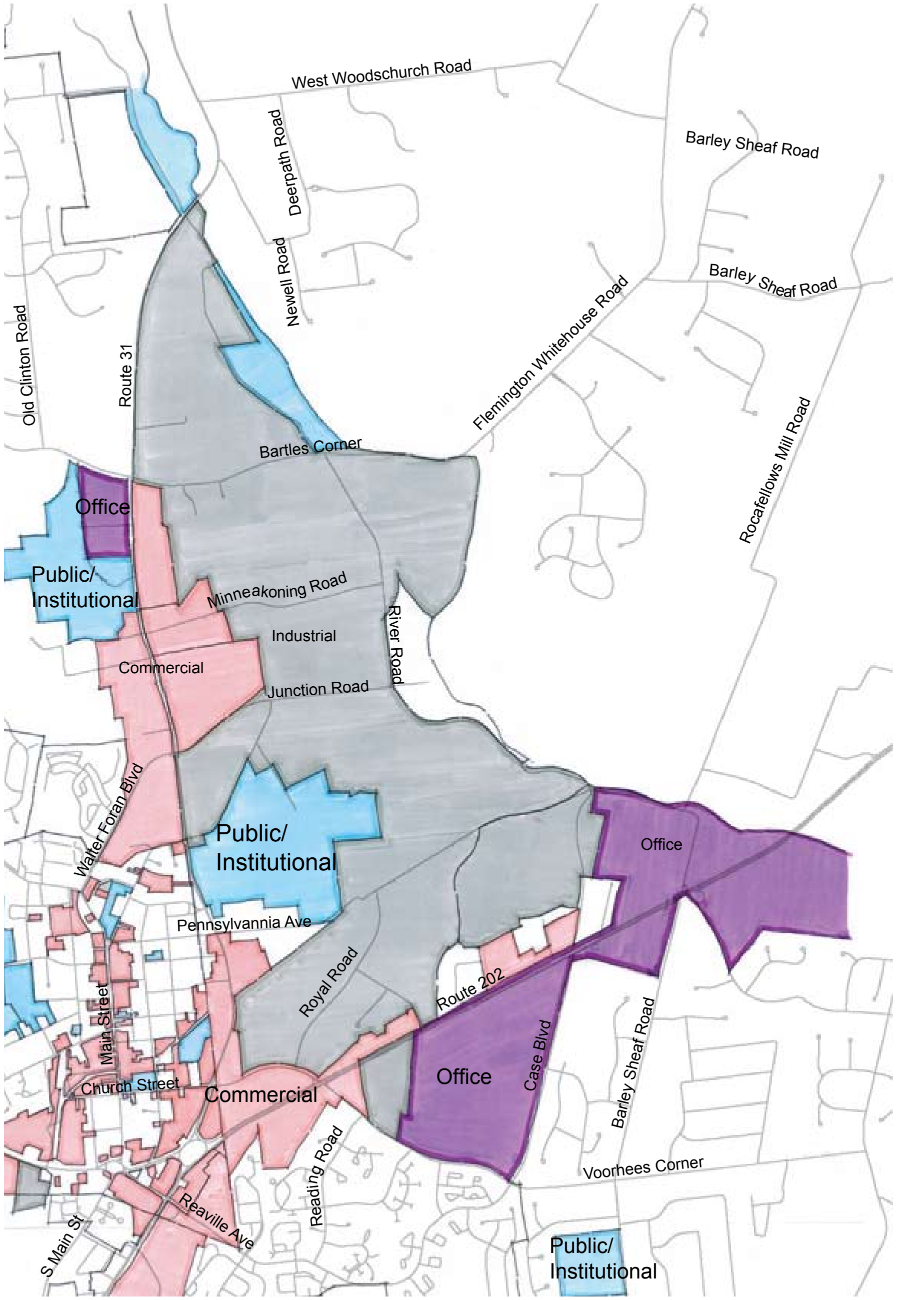
Open Space and Cultural Resources

The South Branch River is a unique and valuable resource and connects a system of protected open space that extends 22 miles through Hunterdon County. Its associated creek and wetland systems in the study area form a connected open space system. The South Branch was also the location for the area's early settlers and remnants of that past include Darts Mill, the Reading Homesite, Rockafellows Mill, and several stone arch bridges.

Conclusion:
Together, these historic and environmental resources give the area a rich cultural identity that should be protected and enhanced.

Legend

▨ *Wetlands*
▨ *Recreation/ Conservation*
▨ *Historic District*
▨ *School*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Rocafellows Mill Road
Office
Public/
Institutional
Minneakoning Road
Industrial
River Road
Commercial
Junction Road
Walter Foran Blvd
Public/
Institutional
Office
Pennsylvannia Ave
Royal Road
Route 202
Main Street
Case Blvd
Barley Sheaf Road
Office
Church Street
Commercial
Reading Road
Voorhees Corner
Reaville Ave
S Main St
Public/
Institutional

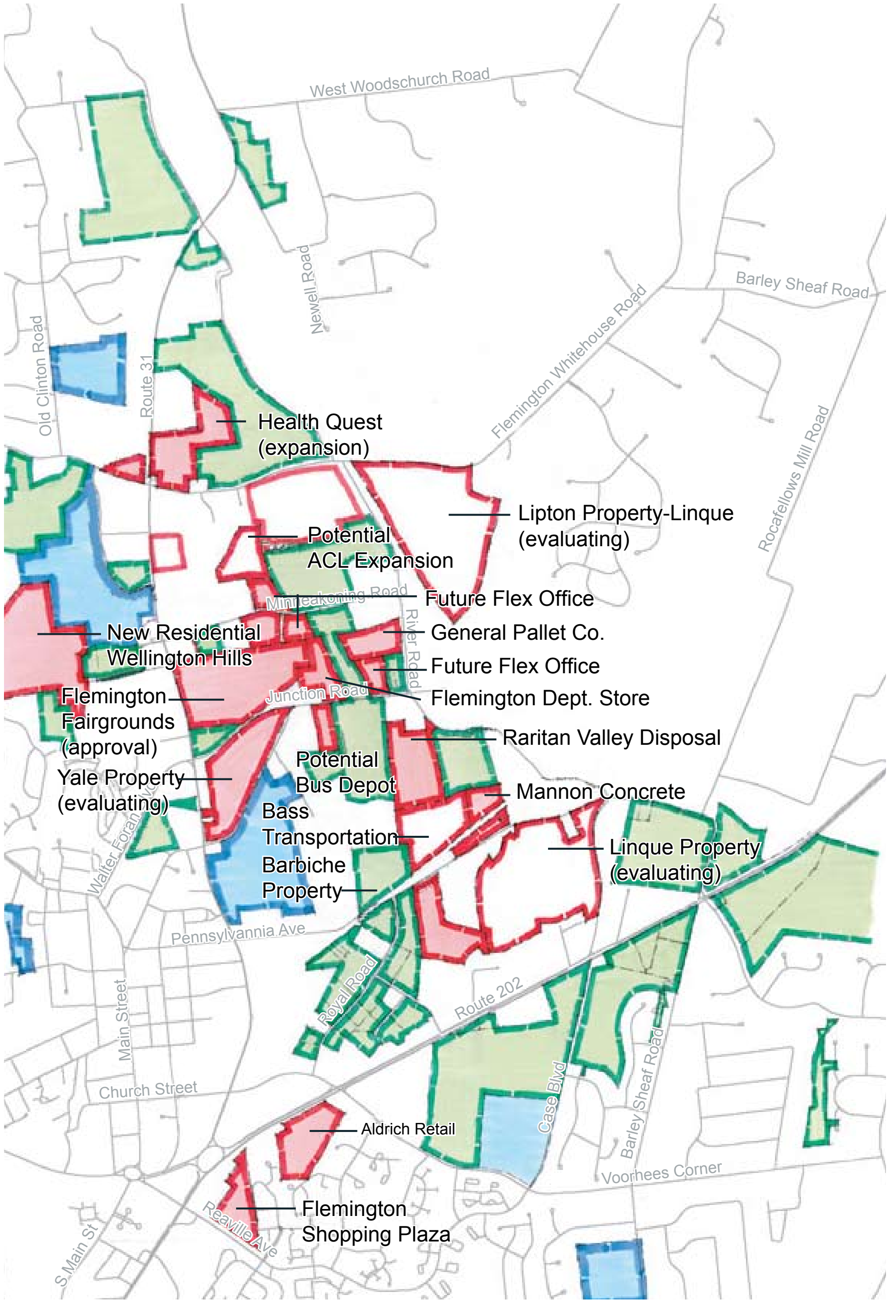
Zoning

The area between Route 31 and the South Branch River is predominantly zoned for industrial use due in part to the area's historic industrial connection to the river and adjacent railroads, and local planning efforts to support new employment uses while managing residential growth. Today, this industrial development consists mainly of flex office space and distribution/warehouse use dependent mainly on the local road network for access.

Conclusion:
There may be an oversupply of industrially zoned land. While industrial/office development is important to the area, other uses should be considered.

Legend

🟥 Commercial	⬜ Industrial
🟦 Institutional	🟪 Office

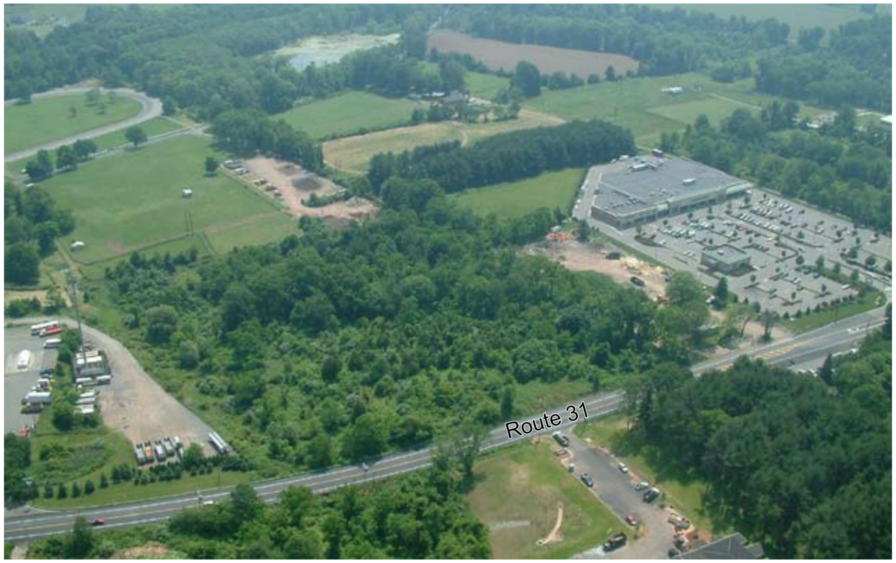

West Woodschurch Road
Newell Road
Old Clinton Road
Route 31
Health Quest (expansion)
Flemington Whitehouse Road
Barley Sheaf Road
Rocafellows Mill Road
Lipton Property-Linque (evaluating)
Potential ACL Expansion
Minneakoning Road
Future Flex Office
River Road
New Residential Wellington Hills
General Pallet Co.
Future Flex Office
Junction Road
Flemington Dept. Store
Flemington Fairgrounds (approval)
Raritan Valley Disposal
Potential Bus Depot
Yale Property (evaluating)
Mannon Concrete
Bass Transportation
Walter Foran Blvd
Linque Property (evaluating)
Barbiche Property
Pennsylvania Ave
Royal Road
Route 202
Main Street
Church Street
Case Blvd
Barley Sheaf Road
Aldrich Retail
Voorhees Corner
Flemington Shopping Plaza
S.Main St
Reaville Ave

Development Pressure

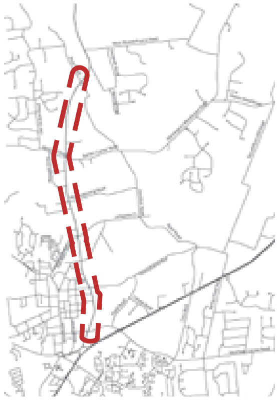
Within the study area there are a large number of parcels under various levels of development pressure, with a wide range of uses considered including commercial, office, residential, and industrial. Without additional transportation network, these developments will have an increasing impact on existing roads.

Conclusion:
These proposed and potential development projects need to be planned and integrated into the land use and transportation plan.

⬚ Potential Development	🟦 Institutions
🟩 Developable (No Current Plans)	🟥 Pending Development



Example of new commercial expansion north of Sand Hill Road/Bartles Corner

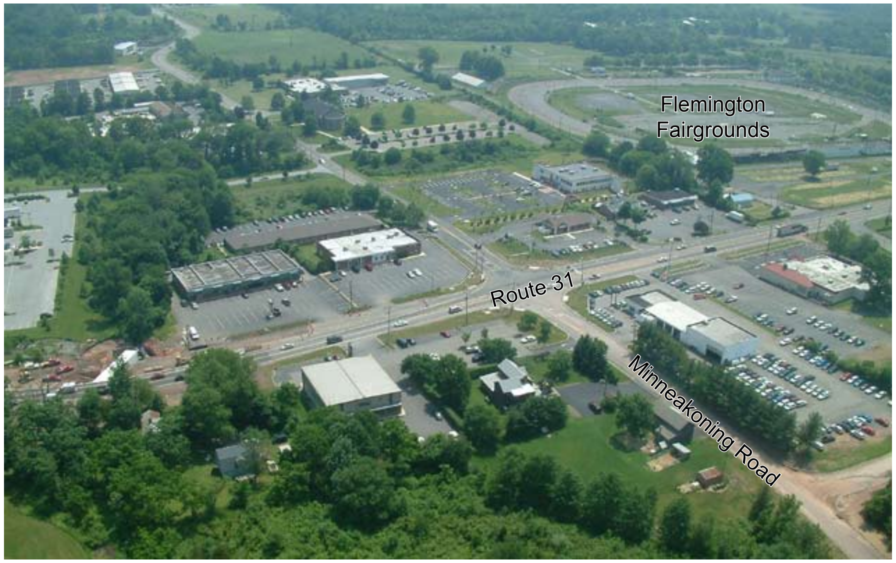


Key Map

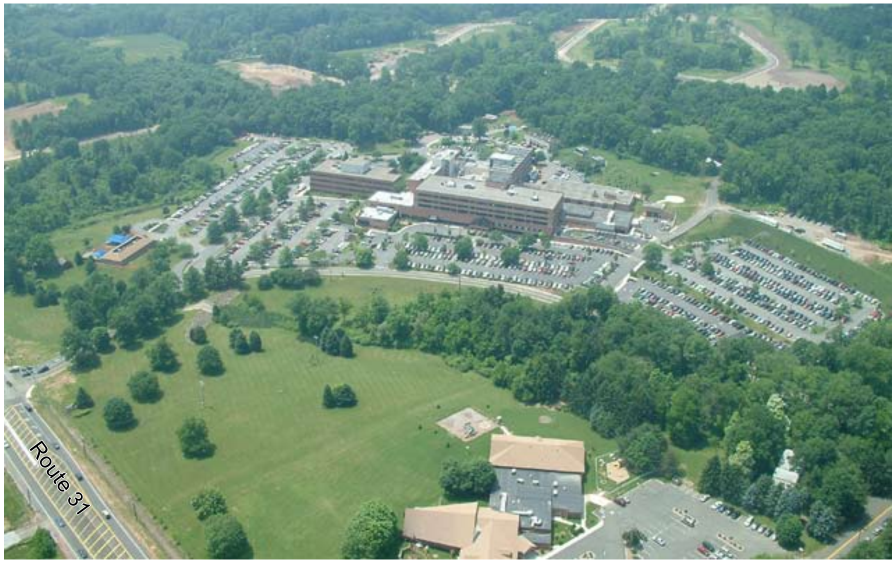
2.3 Study Area Tour

Existing Route 31

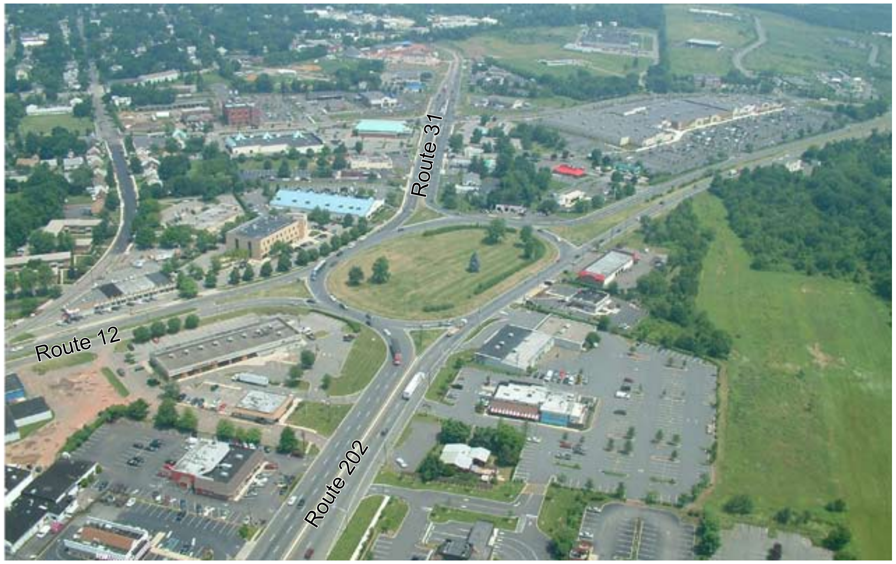
Development on existing Route 31 includes a mix of aging homes, older strip commercial development, recent commercial and office development, and significant regional destinations such as the Hunterdon Regional Medical Center and Hunterdon Central Regional High School.


Flemington Fairgrounds
Route 31
Minneakoning Road

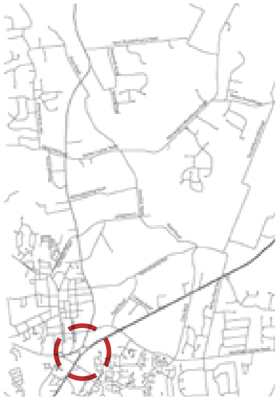
Example of aging commercial development



Hunterdon County Medical Center represents a regional destination on Route 31


Route 31
Route 12
Route 202

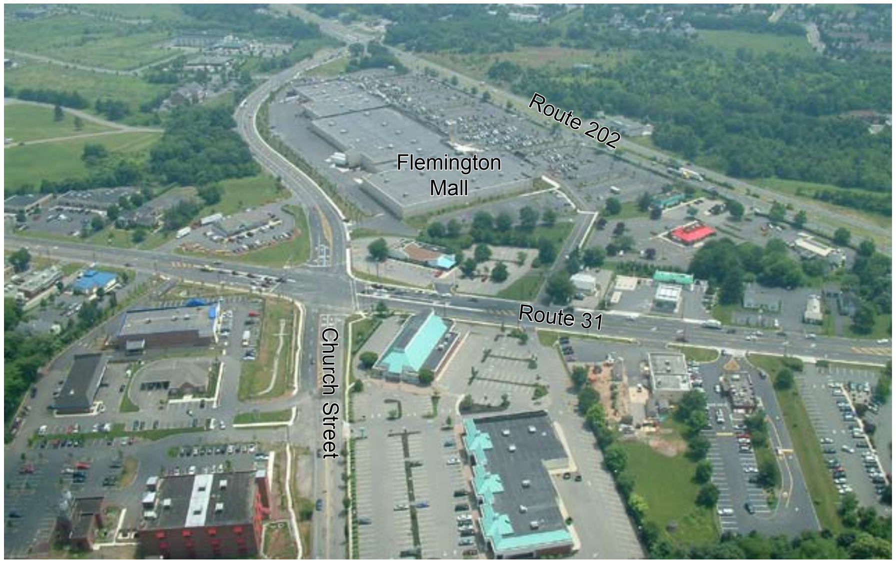
View of Flemington Circle looking northeast. Highlights the confluence of three major routes (202,31, & 12).



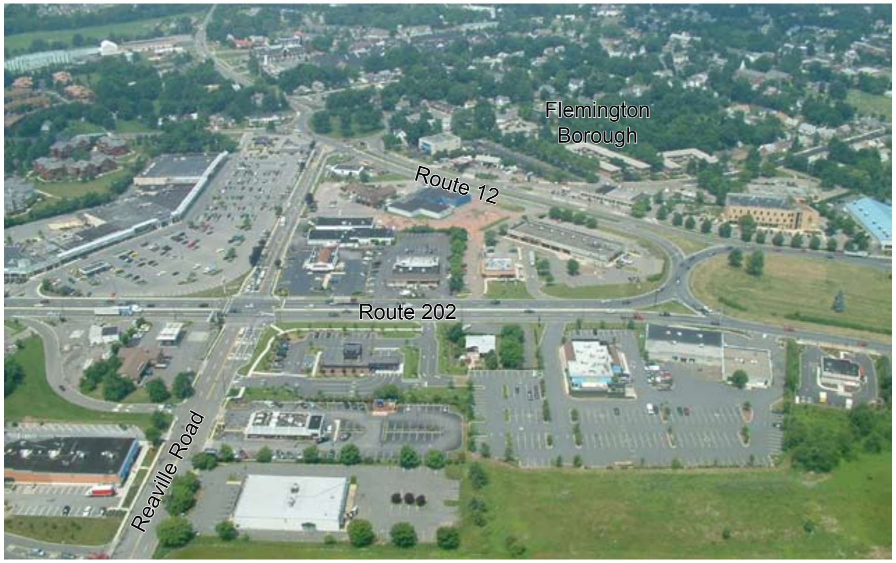
Key Map

Flemington Circle

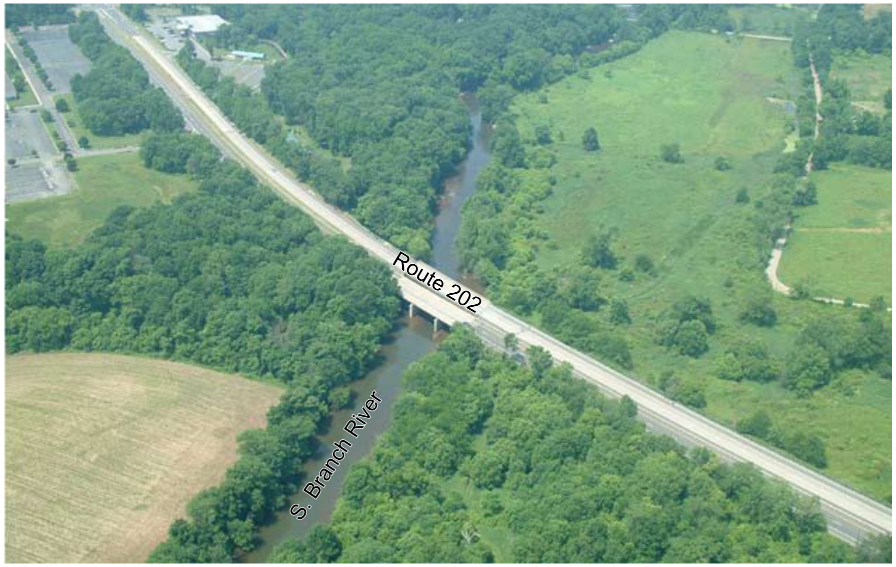
Flemington Circle is the historic junction for Routes 31, 202 and 12 which over time has become a significant traffic bottleneck. Yet its central location and pass-by traffic continue to make it an attractive location for commercial development.


Route 202
Flemington Mall
Route 31
Church Street

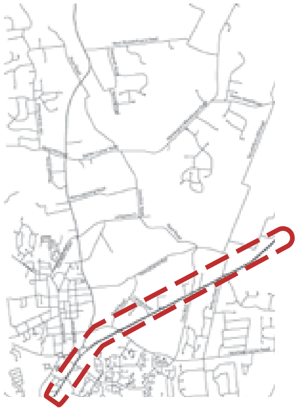
View of Church Street & Flemington Mall.


Flemington Borough
Route 12
Route 202
Reaville Road

View looking west contrasting the pattern of suburban commercial development with the historic pattern of Flemington Borough.



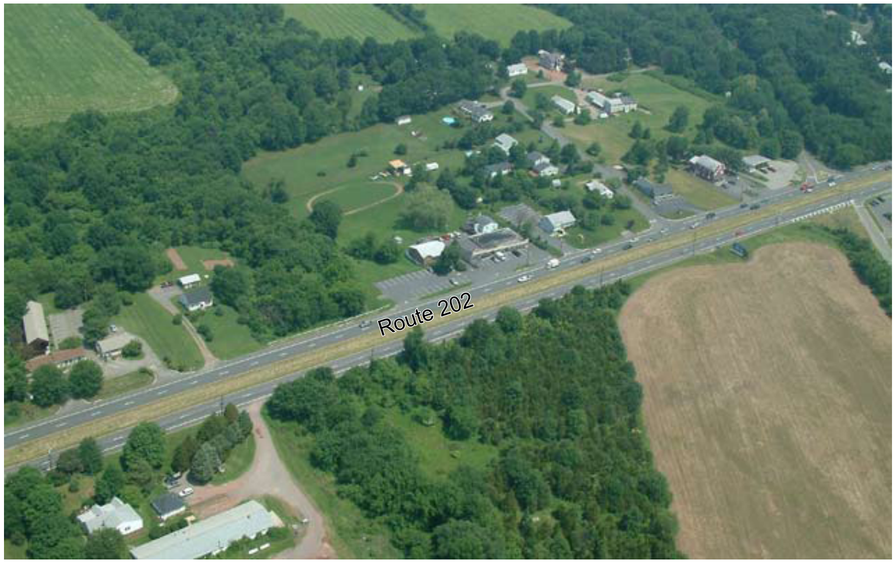
Route 202 as it crosses the South Branch River.



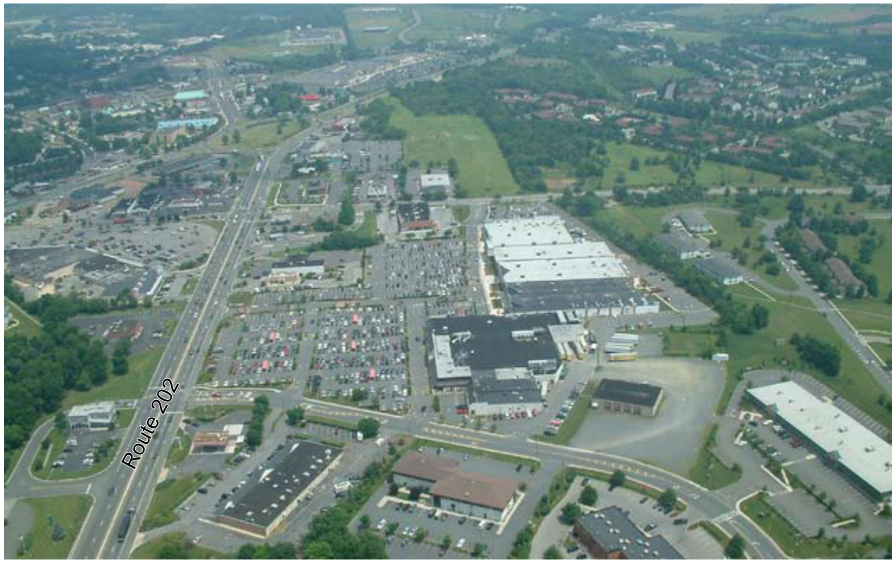
Key Map

Route 202

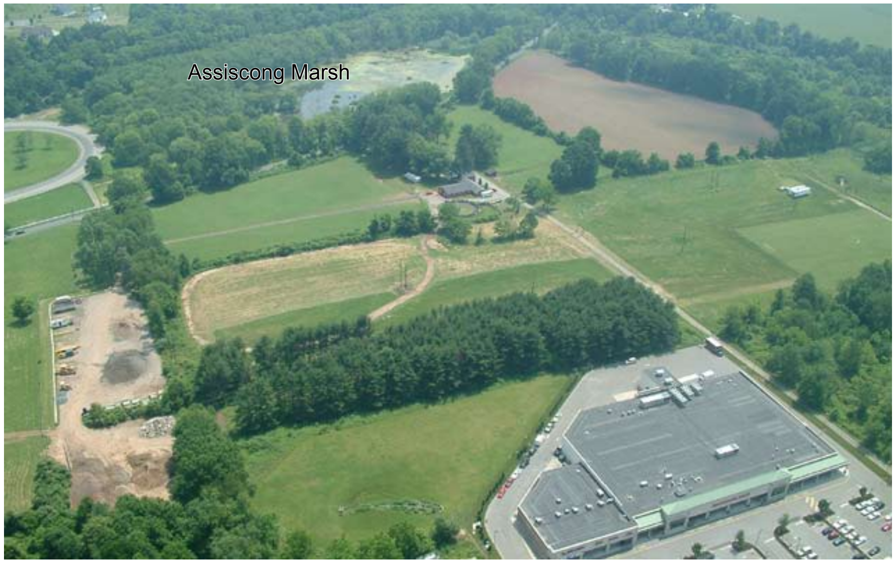
Moving east, from Three Bridges, Route 202 transitions from a low-density rural development pattern to a rapidly developing suburban commercial development pattern.



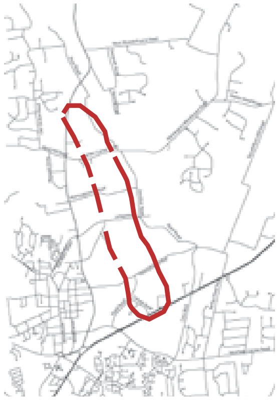
Route 202 just west of the South Branch River illustrating a low density, rural development pattern.



Route 202 looking east at Flemington Circle, illustrating the significant pattern of suburban commercial development.



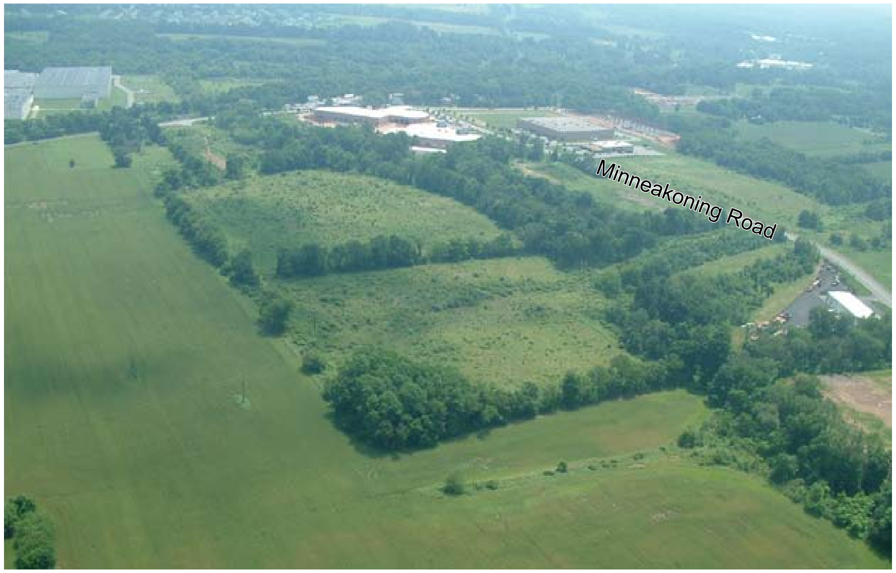
View of Assiscong Marsh and existing farm land.



Key Map

Proposed Corridor

The corridor for the proposed bypass includes significant areas of undeveloped land including existing farms, creek systems connected to the South Branch, and future development sites.

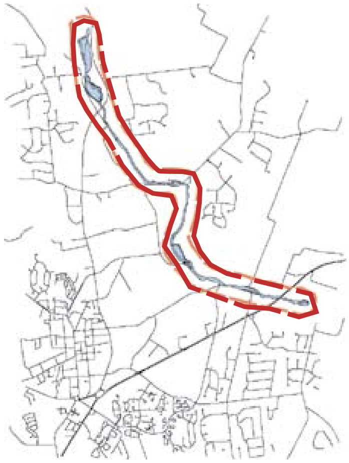


View of undeveloped lands around Minneakoning Road.

View of McLeod family farm.

South Branch River

View of South Branch River at Rockafellow's Mill.



Key Map

South Branch River

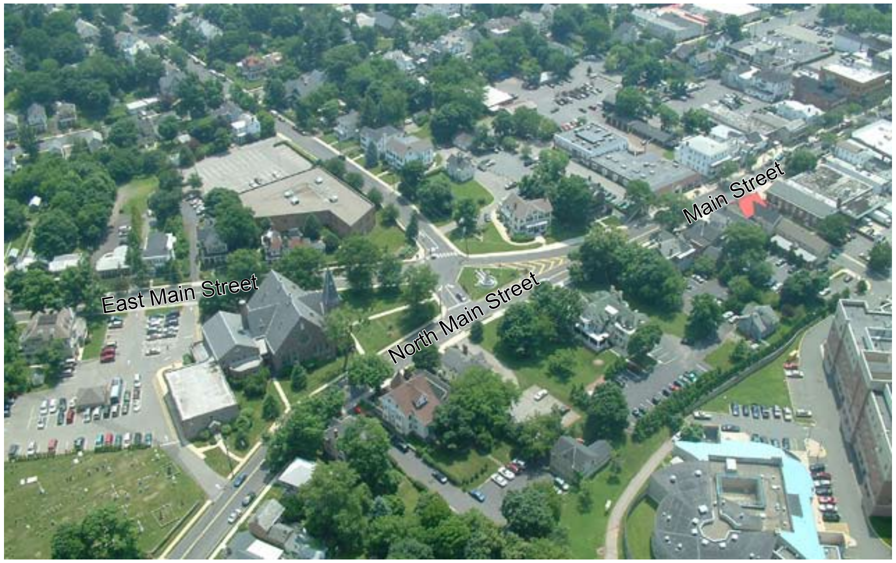
South Branch River forms the eastern boundary of the study area. Land along the River is primarily undeveloped and includes many cultural and historic resources.

Reading Homestead
South Branch River

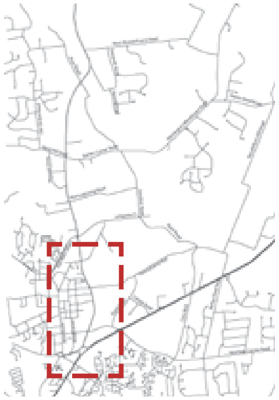
View of South Branch River and the Reading Homestead.

South Branch River

View of Industrial development along River Road


Main Street
East Main Street
North Main Street

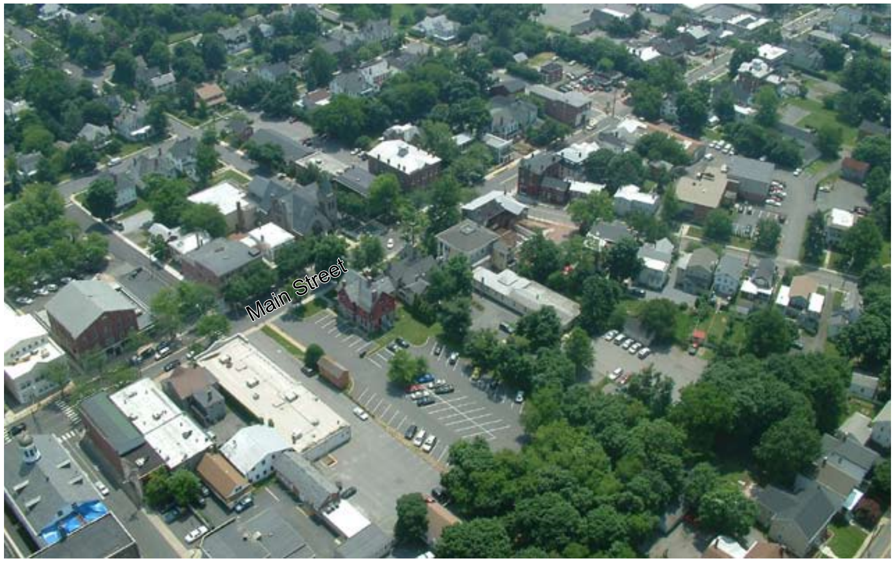
View of Flemington at the Junction of East and North Main Street.



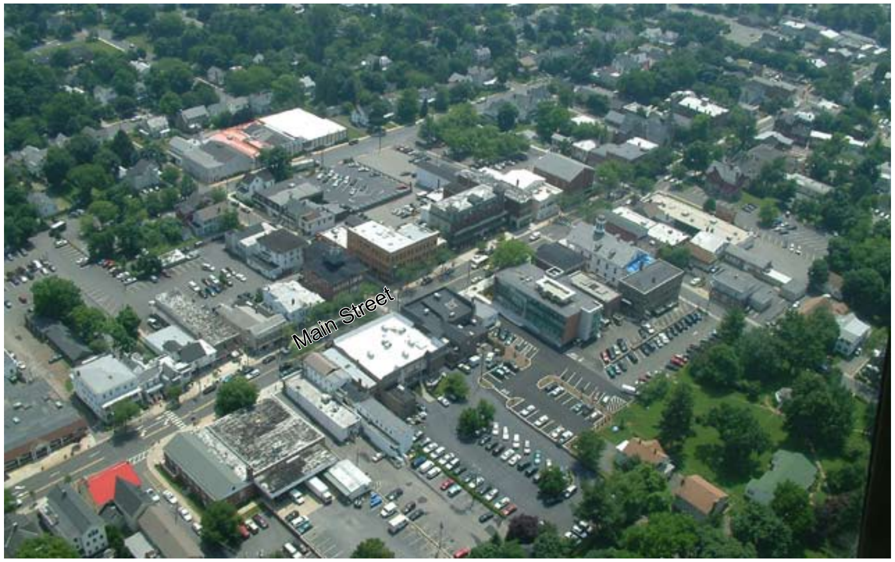
Key Map

Flemington Borough

Settled in 1756, Flemington is a historic town with about 60% of its buildings listed in the National Register for Historic Places. The borough has a traditional grid street pattern with a compact, fine-grained built fabric and a mixed-use character, all centered on a traditional Main Street.


Main Street

View of Main Street illustrating the historic patter of residental and commercial development.


Main Street

Flemington's Main Street

Historic & Cultural Resources

The South Branch River was an early settlement site and has given the area many historic, cultural, and environmental resources.

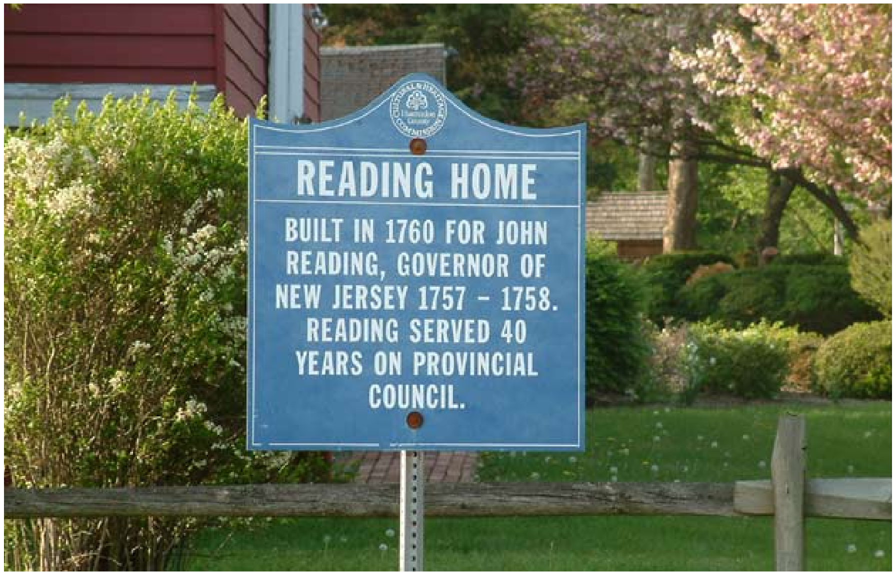
SOUTH BRANCH
HISTORIC DISTRICT
THE SITE OF
HOMESTEADS SETTLED
EARLY IN THE 1700'S
RARITAN TOWNSHIP HISTORIC
PRESERVATION COMMITTEE

The South Branch River was a significant settlement site.

The area includes several historic stone arch bridges.

JACOB CASE
FREEHOLDER
HUNTERDON
COUNTY
1872

Detail of stone arch bridge dating back to 1872.


READING HOME
BUILT IN 1760 FOR JOHN READING, GOVERNOR OF NEW JERSEY 1757 - 1758. READING SERVED 40 YEARS ON PROVINCIAL COUNCIL.

The Reading Home is an important historical resource.

Historic & Cultural Resources Continued

View of Reading Homesite

View of South Branch River at Rockafellows Mill.

SOUTH BRANCH
RESERVATION
HUNTERDON COUNTY PARK SYSTEM
ASSISCONG MARSH NATURAL AREA
GREEN ACRES
PARK OPEN SUNRISE TO SUNSET
NO PARKING AFTER SUNSET

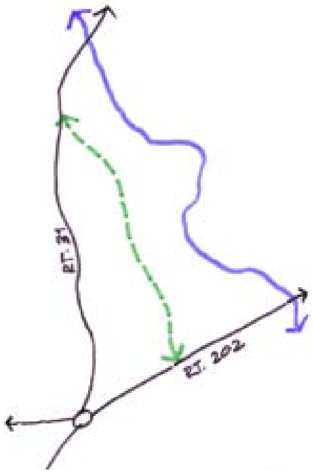
The South Branch Preservation and Assiscong Marsh are important public resources.

Section 3

Framework Plan

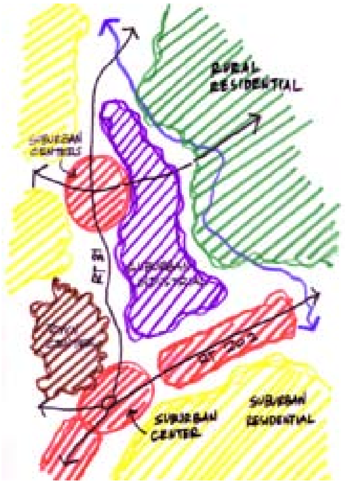
3.1 Design Principles

These Design Principles illustrate the key themes uncovered through the planning process and represent the underlying structure of the Framework Plan.



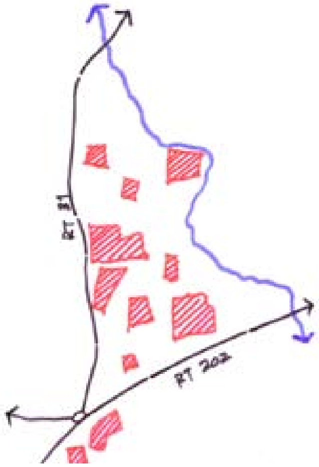
Provide a Regional Alternative

The desire for an alternative to Route 31 for regional traffic has been clearly expressed by local stakeholders. This "regional alternative" should be a key component of the Land Use and Transportation Plan.



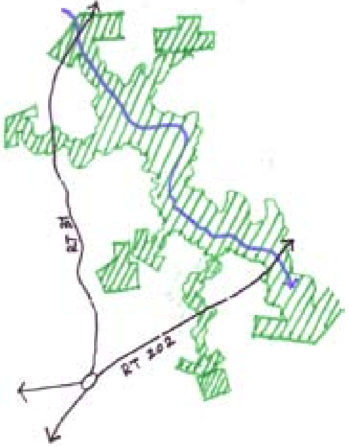
Recognize Land Use Patterns

The South Branch River defines a significant boundary between the rural and farmland to the east, and suburban development along Route 31 and Route 202 to the west. The Land Use and Transportation Plan should strengthen this distinction by defining an edge to development and establishing "centers" for future development.



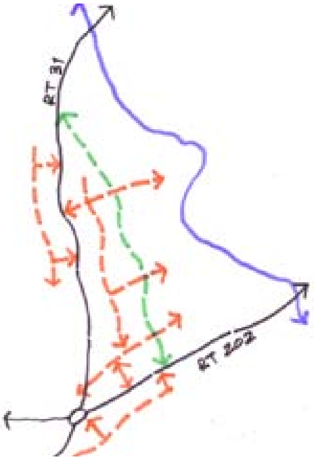
Plan for Future Development

There are a number of properties within the area that are under pressure to develop. These sites should be proactively incorporated into the Land Use and Transportation Plan.



Celebrate Cultural Resources

The area is home to a unique set of natural, historic, and cultural resources. The South Branch River and its tributaries and wetlands serve to connect to these resources and should be celebrated and protected as a public greenway and open space system.



Build Network Over Time

As development occurs, new street network should be built, adding transportation alternatives for local traffic and minimizing pressure on existing Route 31. This new network will support sidewalks and other amenities to encourage pedestrian and bicycle movement throughout the area and increase connectivity.

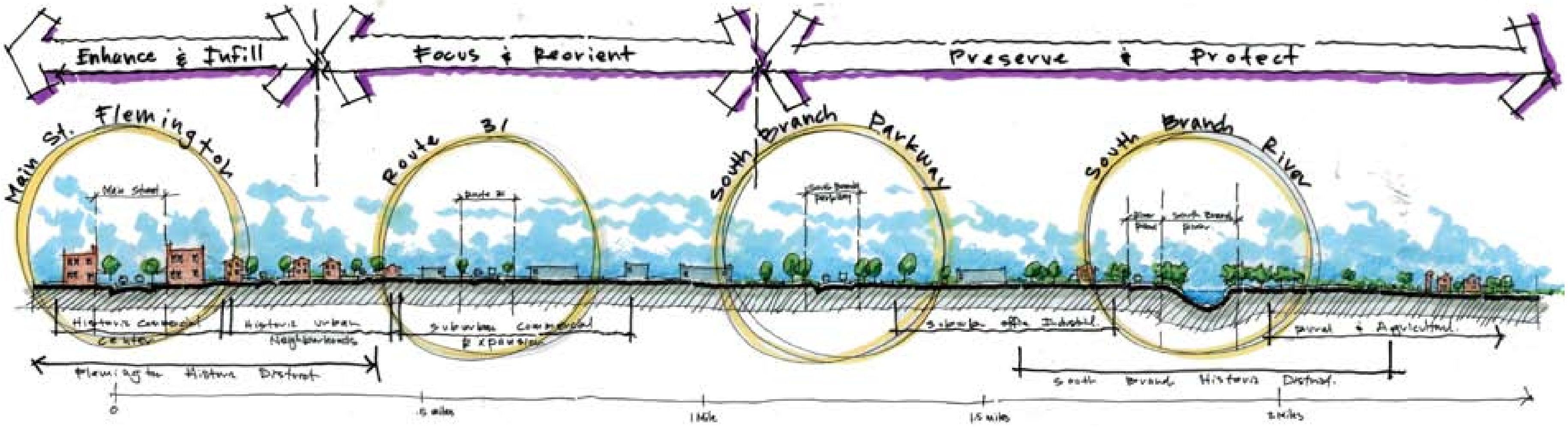
3.2 Transect

The Framework Plan recognizes the unique context of the study area. This context, as illustrated in the Transect Diagram, ranges from the historic center of Flemington, to the suburban corridor of Route 31, to the rural farm land along the South Branch of the Raritan River. This urban, to suburban, to rural transition requires a land use and transportation approach that responds to the particular characteristics of each area.

Flemington Historic Center – *"Enhance and Infill"*
Future infill development should be targeted in this area to fit within its historic context and enhance its character.

Route 31 Suburban Corridor – *"Focus and Reorient"*
New development in the 31 corridor should be planned and designed to focus intensity in key areas and reorient its form to be pedestrian supportive.

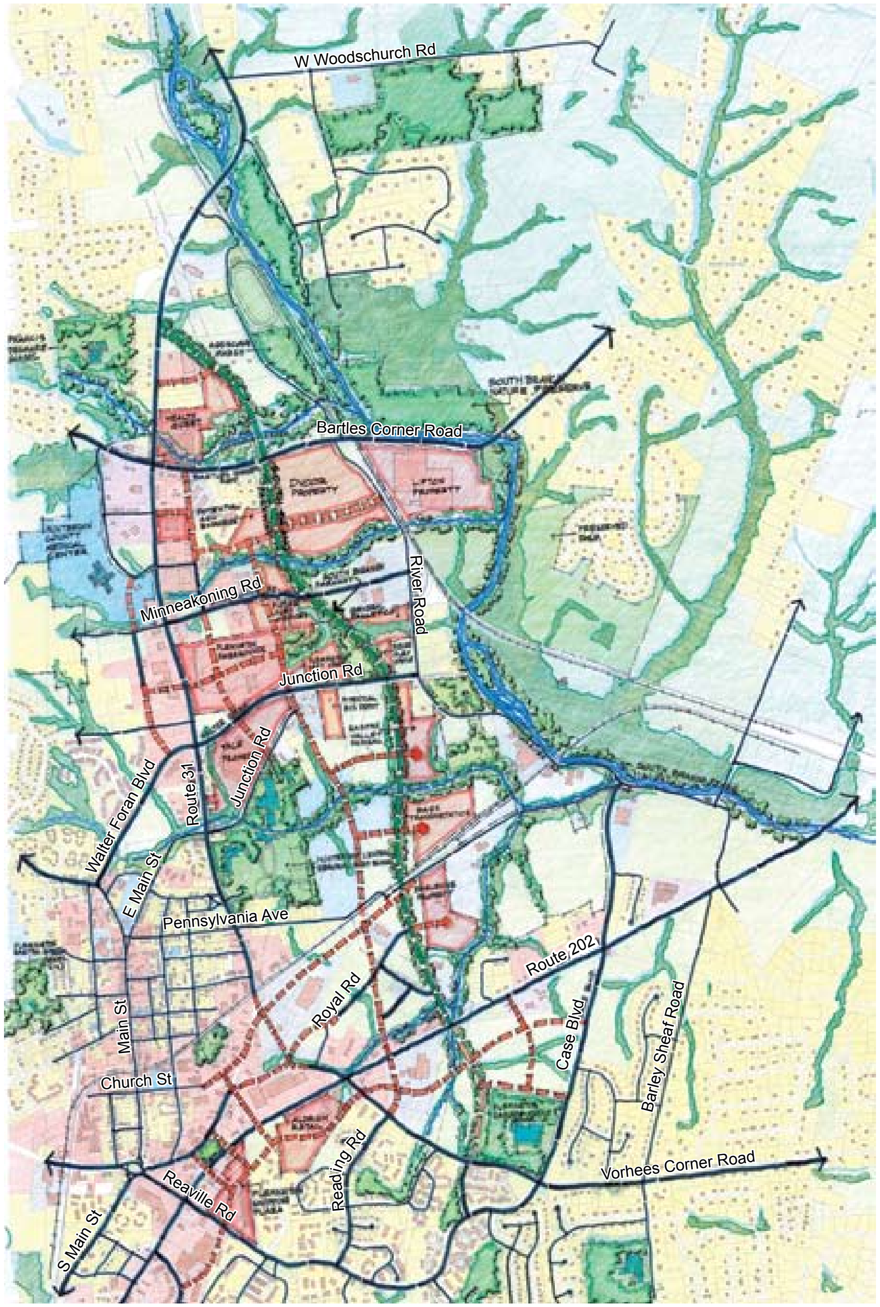
South Branch of the Raritan River – *"Preserve and Protect"*
The South Branch Parkway should serve as a seam between the suburban and rural landscapes and development along the river should be limited and controlled to preserve and protect this historic rural landscape.


Enhance & Infill
Focus & Reorient
Preserve & Protect
Main St. Flemington
Main Street
Route 31
Route 31
South Branch Parkway
South Branch Parkway
South Branch River
South Branch River
Historic Commercial Center
Historic Urban Neighborhoods
Suburban Commercial Expansion
Suburban Office Industrial
Rural & Agricultural
Flemington Historic District
South Branch Historic District
0
.5 miles
1 Mile
1.5 miles
2 miles

Main Street Flemington

Route 31

South Branch River


W Woodschurch Rd
Bartles Corner Road
Minneakoning Rd
River Road
Junction Rd
Junction Rd
Route 31
Walter Foran Blvd
E Main St
Pennsylvania Ave
Route 202
Royal Rd
Main St
Church St
Case Blvd
Barley Sheaf Road
Reading Rd
Vorhees Corner Road
Reaville Rd
S Main St

3.3 Framework Plan

The Framework Plan represents a "sketch" land use and transportation vision for the future. It attempts to link the area's current development activity with the community's future goals for transportation, land use, open space, and historic preservation. It illustrates that transportation decisions can be made to support land use and community character by focusing access where development is desired and limiting access where development is discouraged.

The South Branch Parkway

- Conceived as an at-grade, 3-lane (2 lanes with a center turn lane) parkway that provides a regional alternative to existing Route 31
- Defines an edge between the area's urban/suburban and rural/agricultural development patterns
- Interconnected to the existing and proposed street network with intersections at key locations
- Provides a recreational/greenway corridor that connects adjacent schools, parks, and open space resources

Expanded Street Network

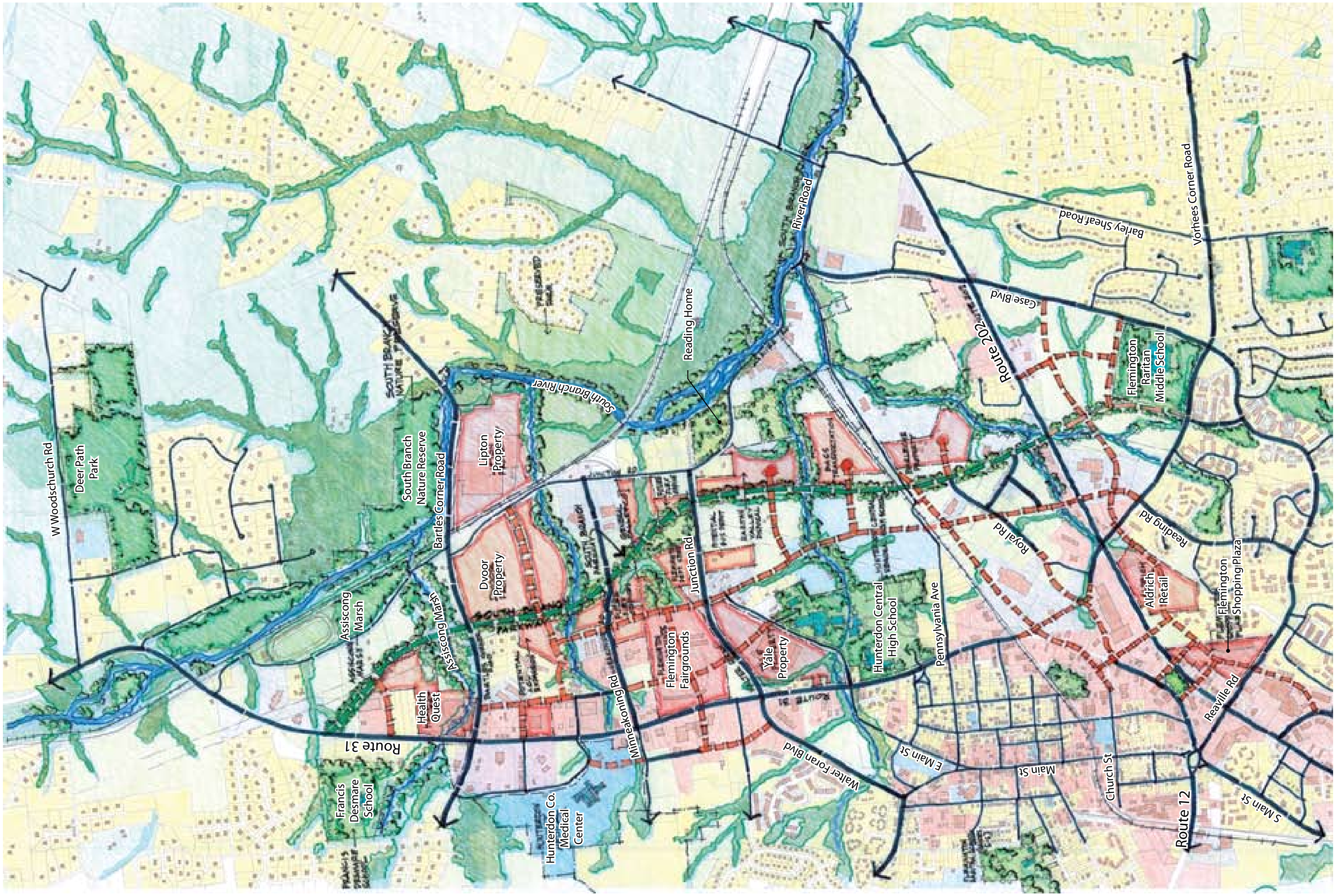
- Provides transportation alternatives and increased connectivity for local traffic.
- Developed over time as development occurs
- Helps take traffic pressure off of major roads
- Designed with pedestrian and bicycle amenities, supporting other modes of travel

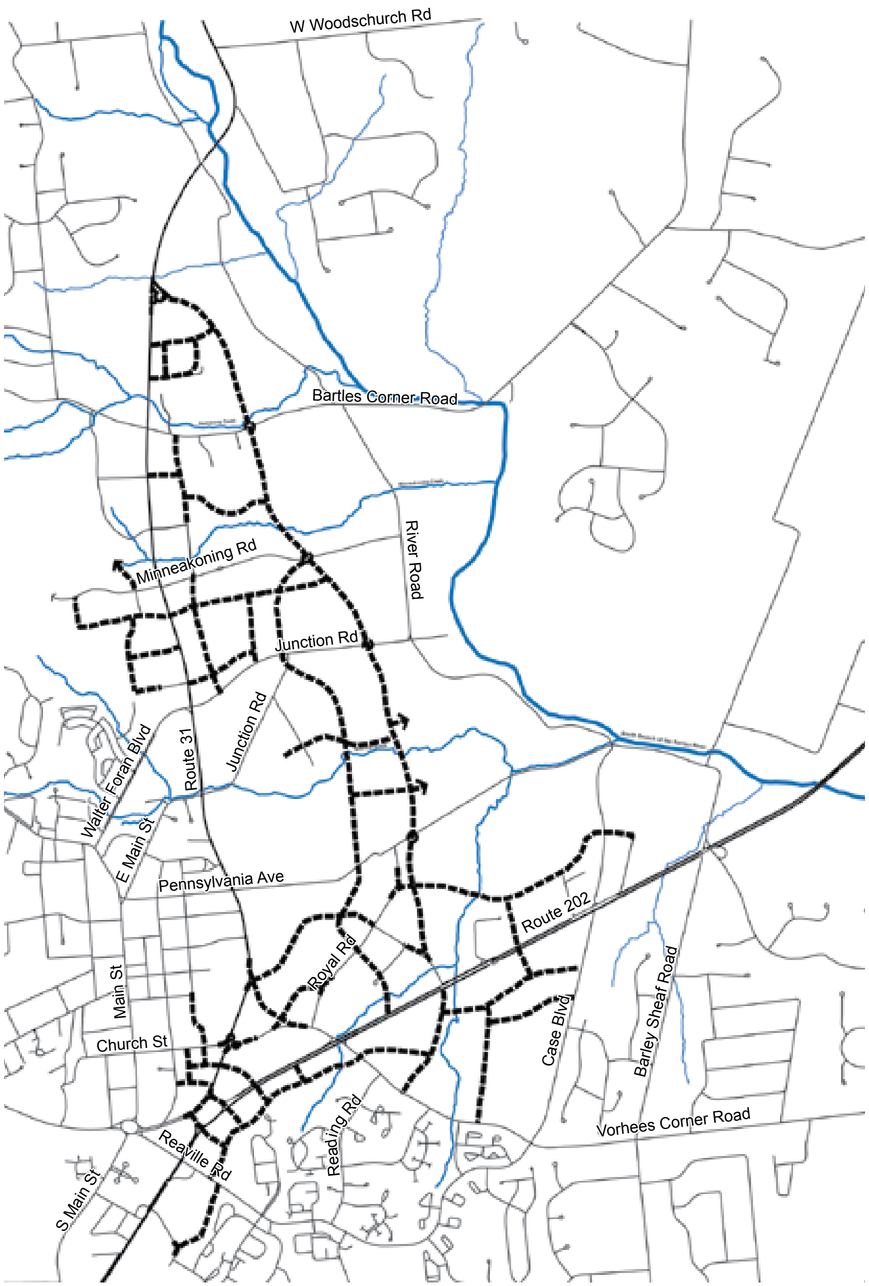
Focused Development

- Use the South Branch Parkway as an "edge" to development.
- Focus future development where the transportation network (existing & proposed) can support it
- Develop mixed-use centers of development (Flemington Circle/202, Barltes Corner/31, others?)

The South Branch Cultural & Open Space System

- Capitalize on this unique resource and make it a recognized amenity for the area
- Promote passive and active open space connections throughout the area via trails and greenways, linking cultural and historic resources
- Encourage preservation of farm lands
- Preserve lands along the South Branch River


W Woodschurch Rd
Deer Path Park
South Branch Nature Reserve
Bartles Corner Road
Lipton Property
Dvoor Property
Assiscong Marsh
Assiscong Marsh
Health Quest
Route 31
Francis Desmare School
Hunterdon Co. Medical Center
Minneakoning Rd
Flemington Fairgrounds
Junction Rd
Reading Home
South Branch River
River Road
Route 31
Yale Property
Hunterdon Central High School
Pennsylvania Ave
Walter Foran Blvd
E Main St
Main St
Church St
Route 12
S Main St
Reaville Rd
Flemington Shopping Plaza
Aldrich Retail
Reading Rd
Royal Rd
Route 202
Flemington Raritan Middle School
Case Blvd
Barley Sheaf Road
Vorhees Corner Road

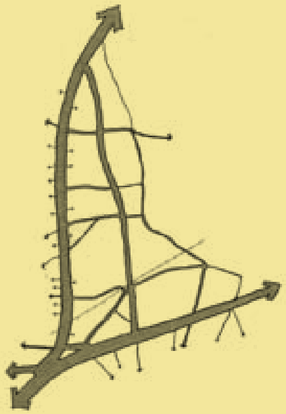

W Woodschurch Rd
Bartles Corner Road
River Road
Minneakoning Rd
Junction Rd
Route 31
Junction Rd
Walter Foran Blvd
E Main St
Pennsylvania Ave
Route 202
Royal Rd
Main St
Church St
Case Blvd
Barley Sheaf Road
Vorhees Corner Road
Reading Rd
Reaville Rd
S Main St

3.4 Proposed Transportation Network

Proposed Transportation Network

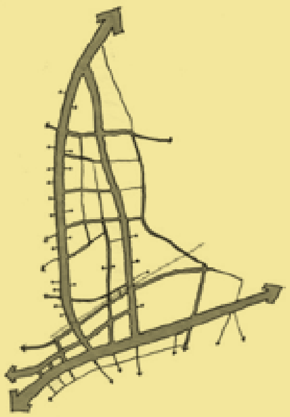
The resulting transportation network builds a series of parallel roads to Route 31 and Route 202, providing a new range of transportation alternatives, organizing future development patterns, and distributing traffic more evenly. The new South Branch Parkway provides a regional alternative extending from Route 202 to Route 31, north of Bartles Corner Road. This parkway will connect, at grade, to existing and proposed roads, allowing it to serve both regional and local traffic.

Network Comparison



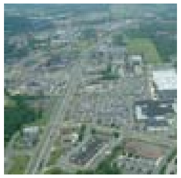
Proposed Route 31 Bypass

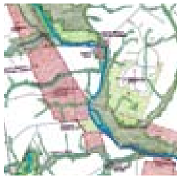
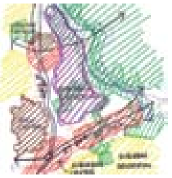
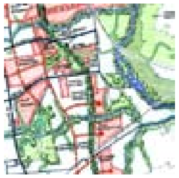
The Bypass as proposed would provide an alternative to existing Route 31. The limited existing network would still carry many of the local trips (trips with destinations or origins in the area) and provide access to future development. A "bottle-neck" still occurs at Flemington Circle where Route 202, Route 31 and Route 12 converge.



South Branch Parkway and Network

The proposed parkway and new network serves to distribute the area's traffic (both local and regional) to a larger number of streets and intersections in an effort to avoid focusing too much traffic to any one location. Flemington Circle is converted into a series of streets and blocks, untangling the convergence of Routes 31, 202, and 12. The resulting increase in connectivity, provides better access to existing business, industry and future development sites.



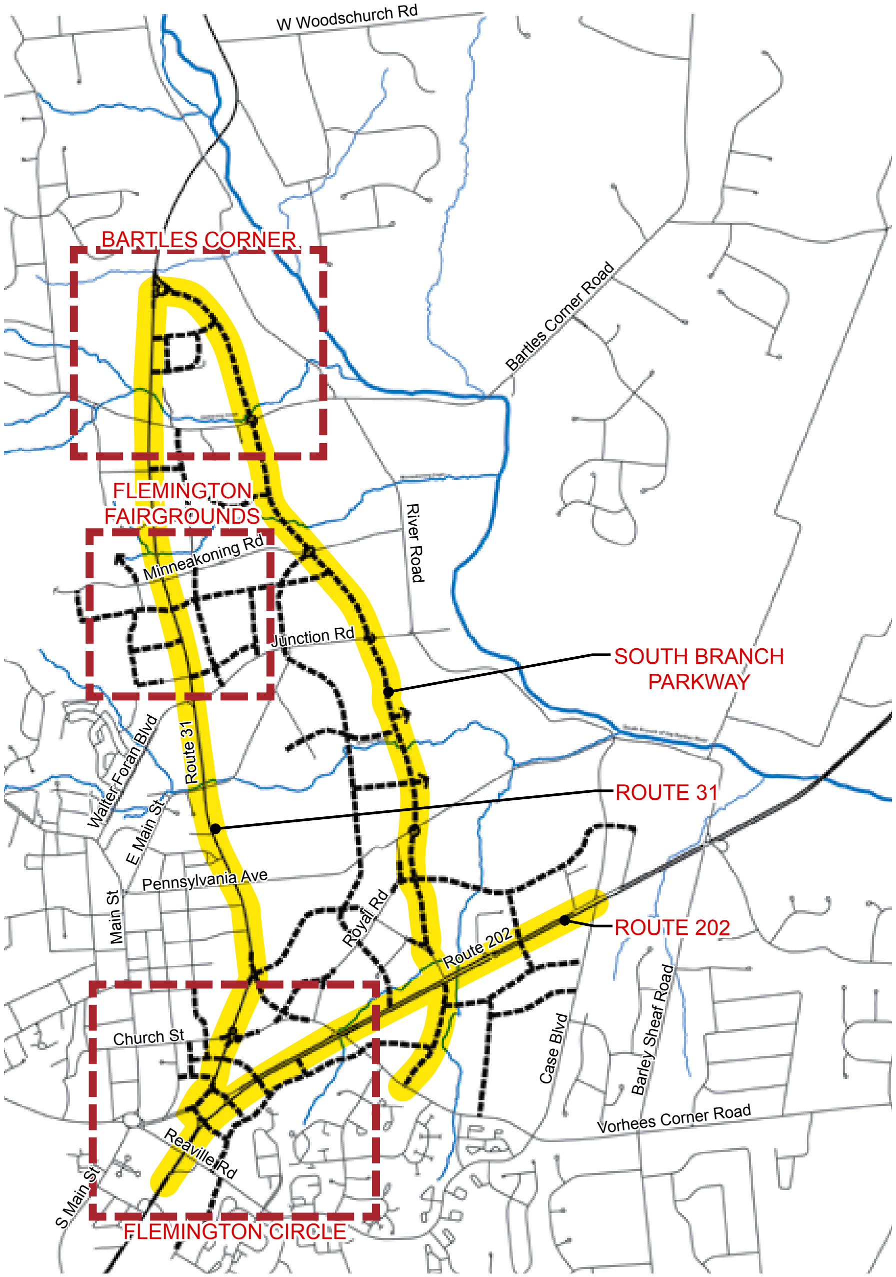




Section 4

Design Vision & Implementation Plan

4.1 Design Focus Areas

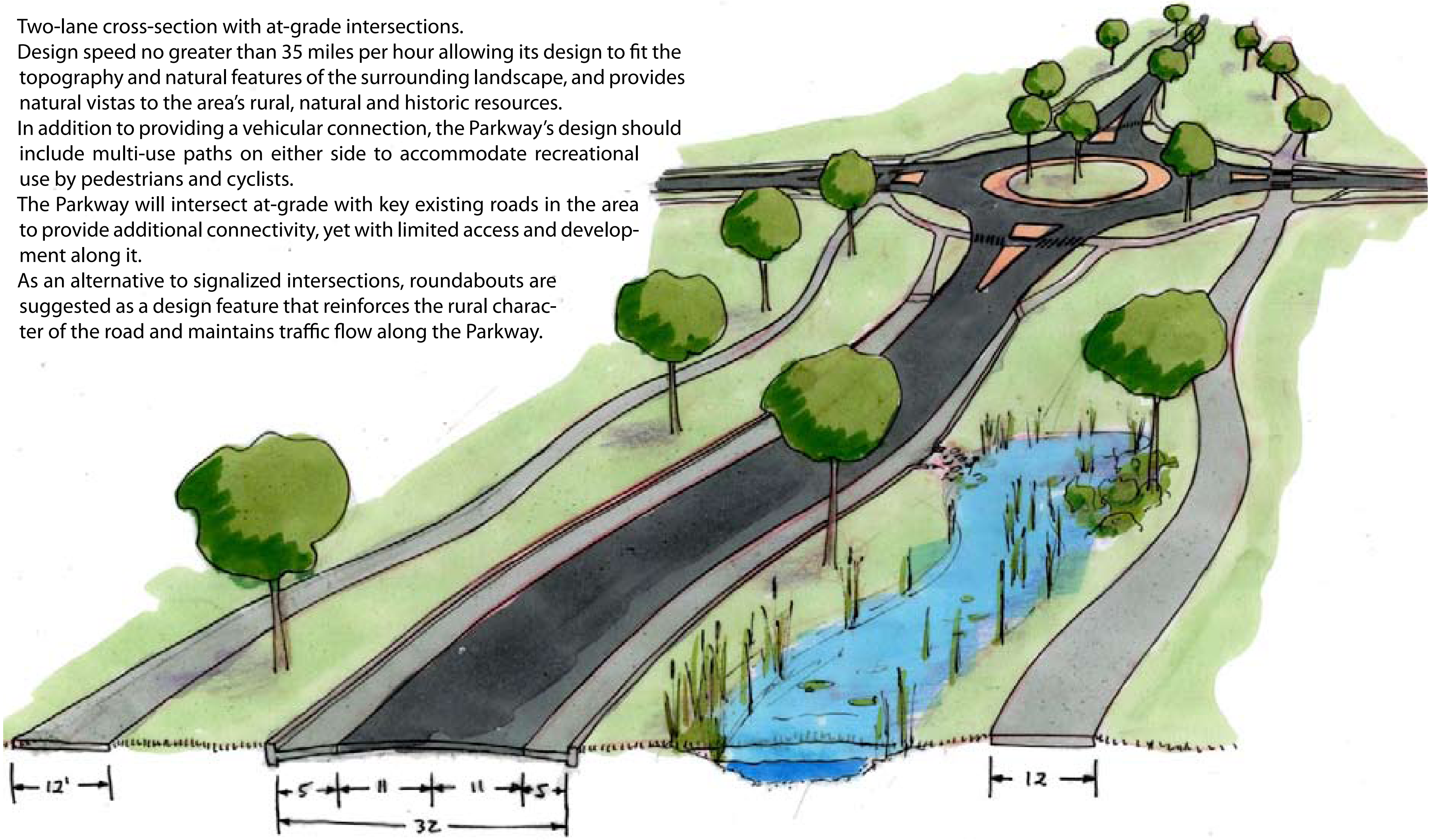
The Framework Plan is simply the starting point for directing the design and implementation of a wide range of transportation projects, land use decisions, and development plans. The following Design Focus Areas illustrate, in greater detail, the design vision for a few of these projects and development plans.


W Woodschurch Rd
BARTLES CORNER
Bartles Corner Road
FLEMINGTON FAIRGROUNDS
Minneakoning Rd
River Road
Junction Rd
SOUTH BRANCH PARKWAY
Walter Foran Blvd
Route 31
E Main St
ROUTE 31
Pennsylvania Ave
Main St
Royal Rd
Route 202
ROUTE 202
Church St
Case Blvd
Barley Sheaf Road
Vorhees Corner Road
Reaville Rd
S Main St
FLEMINGTON CIRCLE

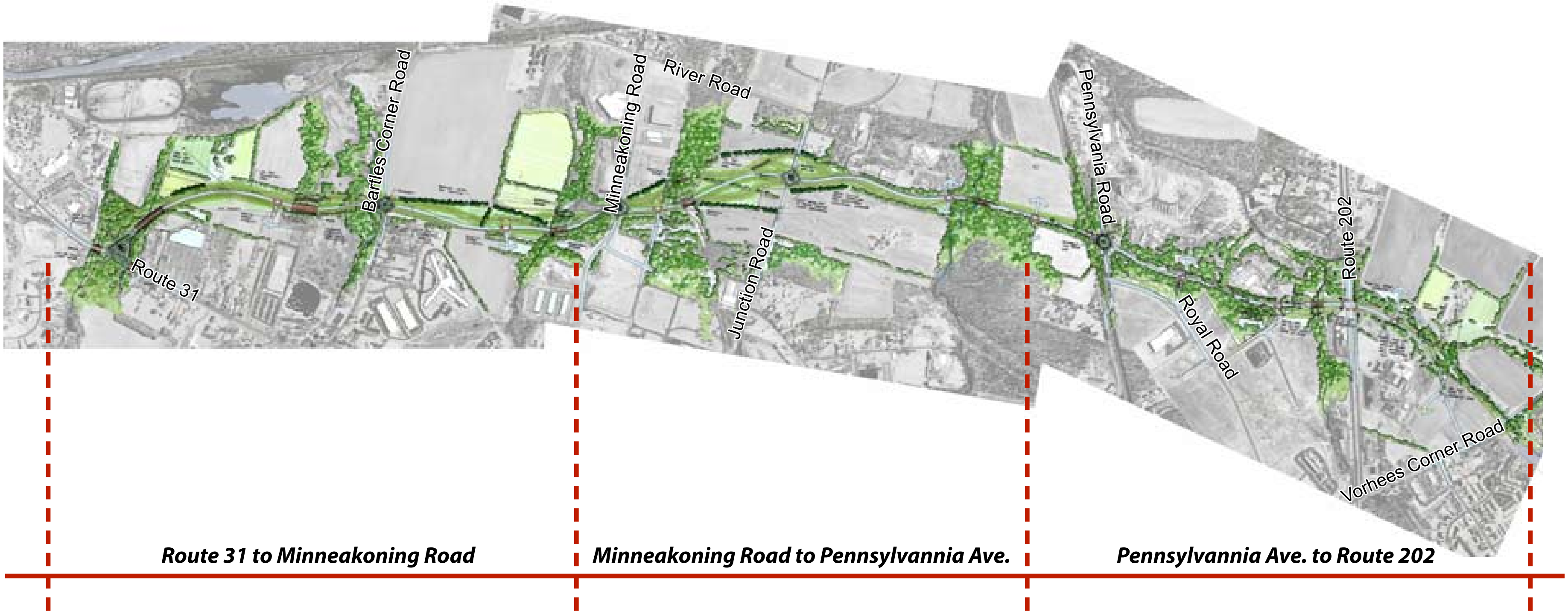
4.2 South Branch Parkway Concept Plan

The vision for the South Branch Parkway is of a road that fits within the rural character of the surrounding landscape while providing an alternative regional connection from Route 31 to Route 202.

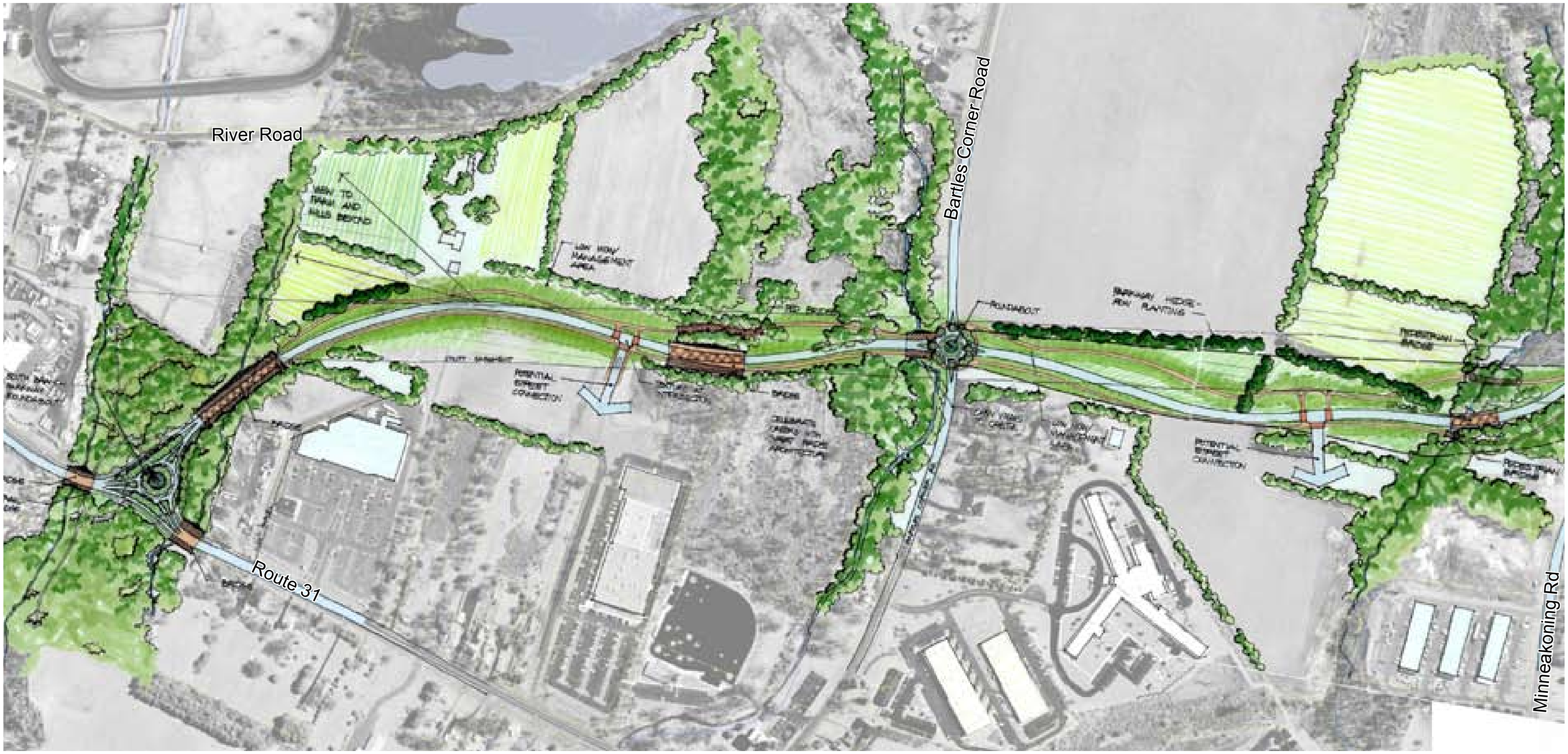
- Two-lane cross-section with at-grade intersections.
- Design speed no greater than 35 miles per hour allowing its design to fit the topography and natural features of the surrounding landscape, and provides natural vistas to the area's rural, natural and historic resources.
- In addition to providing a vehicular connection, the Parkway's design should include multi-use paths on either side to accommodate recreational use by pedestrians and cyclists.
- The Parkway will intersect at-grade with key existing roads in the area to provide additional connectivity, yet with limited access and development along it.
- As an alternative to signalized intersections, roundabouts are suggested as a design feature that reinforces the rural character of the road and maintains traffic flow along the Parkway.



Propose South Branch Parkway Cross-section


Bartles Corner Road
Minneakoning Road
River Road
Pennsylvania Road
Route 31
Junction Road
Royal Road
Route 202
Vorhees Corner Road
Route 31 to Minneakoning Road
Minneakoning Road to Pennsylvannia Ave.
Pennsylvannia Ave. to Route 202

The concept plan for the Parkway proposes an alignment that utilizes portions of existing right-of-way already purchased by the NJDOT and connects from Route 31 just north of Bartles Corner Road, to Route 202 at the Colony Road intersection.


River Road
VIEW TO FARM AND HILLS BEYOND
LOW VIEW MANAGEMENT AREA
Bartles Corner Road
ROUNDABOUT
PARKWAY HEDGE-ROW PLANTING
PEDESTRIAN BRIDGE
SOUTH BRANCH PARKWAY ROUNDABOUT
POTENTIAL STREET CONNECTION
BRIDGE
POTENTIAL STREET CONNECTION
PEDESTRIAN BRIDGE
Route 31
Minneakoning Rd

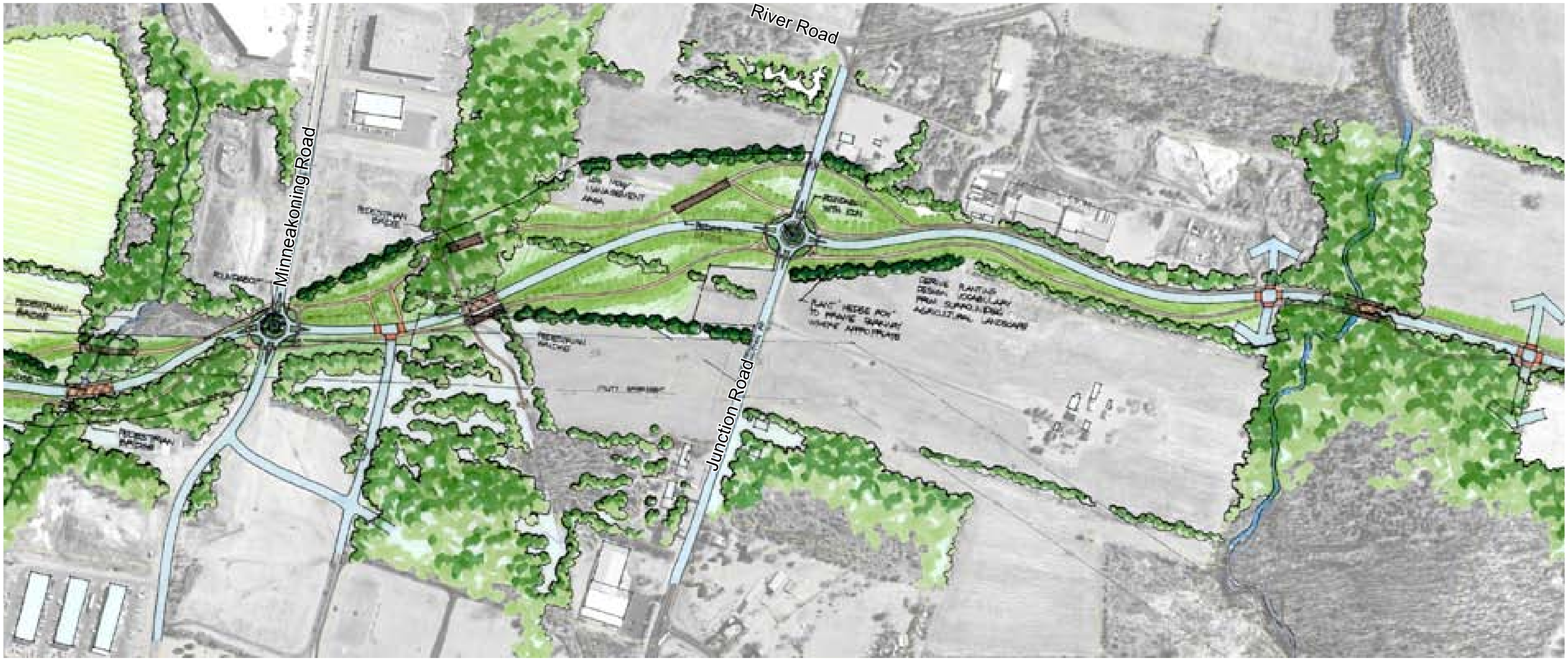
300 0 300 600

N

Scale: 1"=600'

The South Branch Parkway: Route 31 to Minneakoning Road

- Roundabout at Route 31 – creates a gateway to the Parkway and designed to allow free flow of northbound Parkway and southbound Route 31 traffic.
- Provides for one street connection to the Parkway north of Bartles Corner Road from the HealthQuest site that provides access to future commercial development on Route 31. This limited connection manages access to the Parkway while maximizing the area's connectivity.
- Parkway connects at-grade with Bartles Corner Road via a roundabout.
- Provides for one street connection to the Parkway between Bartles Corner Road and Minneakoning Road that can connect to Route 31 and accommodates access to future development west of the Parkway.



300 0 300 600

Scale: 1"=600'

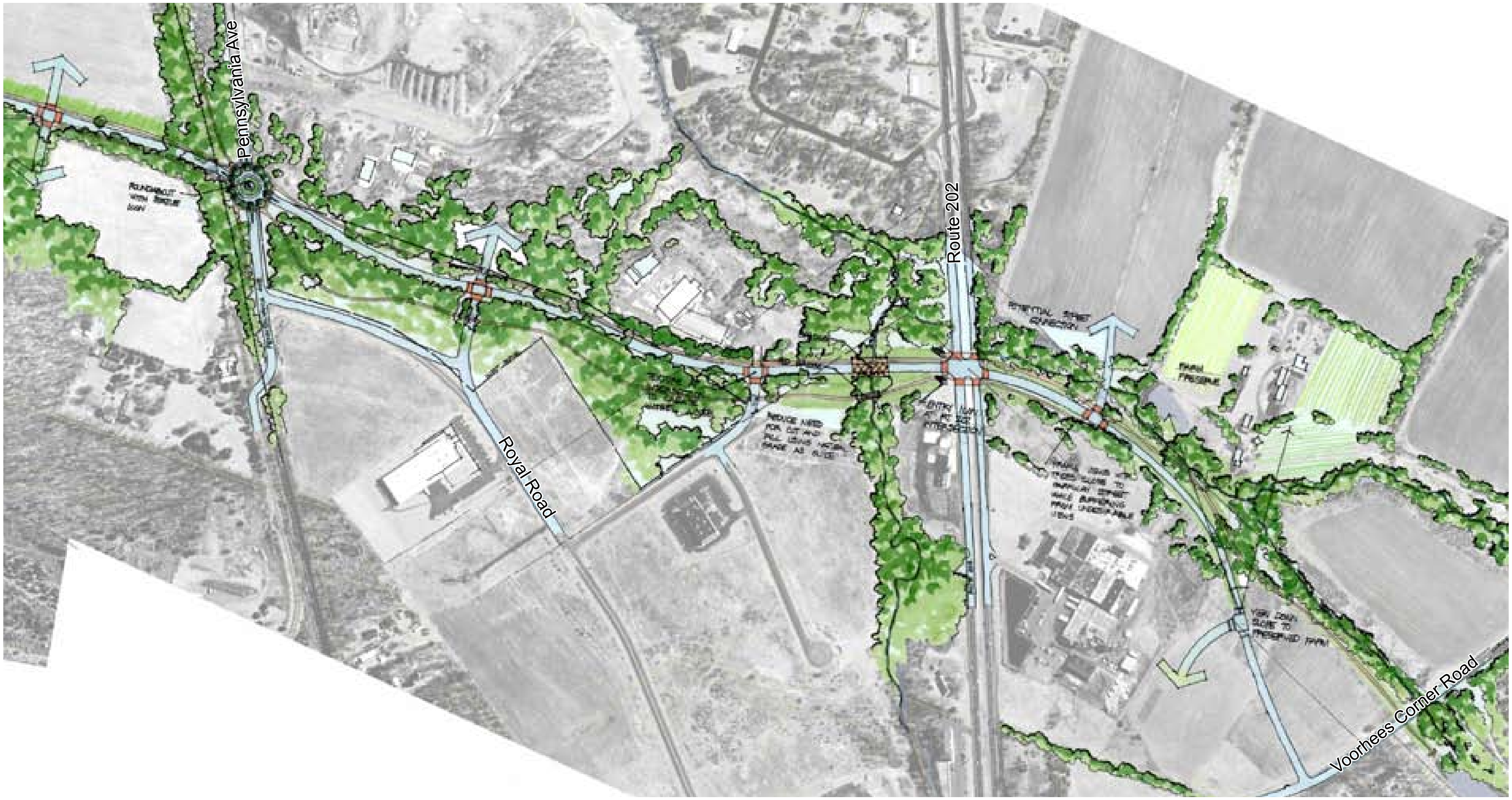
N

The South Branch Parkway: Minneakoning Road to Pennsylvania Ave

- Parkway connects at-grade to Minneakoning Road and Junction Road via roundabouts.

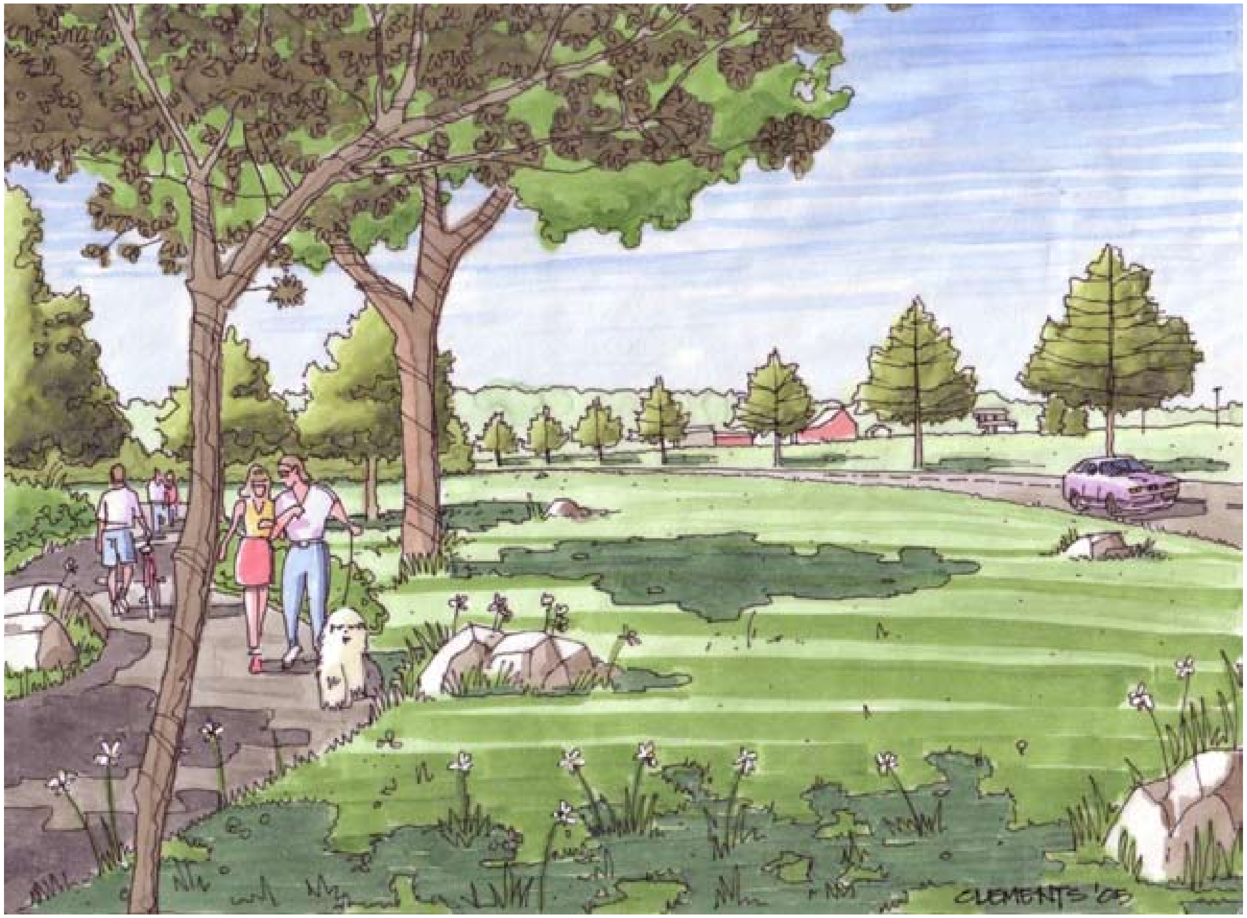
- Parkway utilizes the large area of existing NJDOT right-of-way between Minneakoning Road and Junction Road as a protected open space that can accommodate meandering trails, passive recreation and preserve adjacent vistas.

- Two street connections are planned between Junction Road and Pennsylvania Avenue that correspond to key connections planned in the Framework Plan and provide alternative access for adjacent industrial sites that currently rely solely on River Road (an important historic and constrained roadway) for access.


Pennsylvania Ave
Route 202
Royal Road
Voorhees Corner Road
POTENTIAL STREET CONNECTION
FARM PRESERVE
REDUCE NEED FOR CUT AND FILL USING NATURAL GRADE AS GUIDE
VIEW DOWN SLOPE TO PRESERVED FARM
300
0
300
600
N
Scale: 1"=600'

The South Branch Parkway: Pennsylvania Road to Route 202

- Parkway connects at-grade to Pennsylvania Avenue via a roundabout.
- Parkway aligns with (and utilizes) Colony Road to connect to Route 202 at its existing signalized intersection.
- Provides for two street connections at Royal Road and Colony Road to provide access to adjacent business/industrial park.
- Parkway continues south of Route 202 to Voorhees Corner Road, providing additional connectivity south of Route 202.



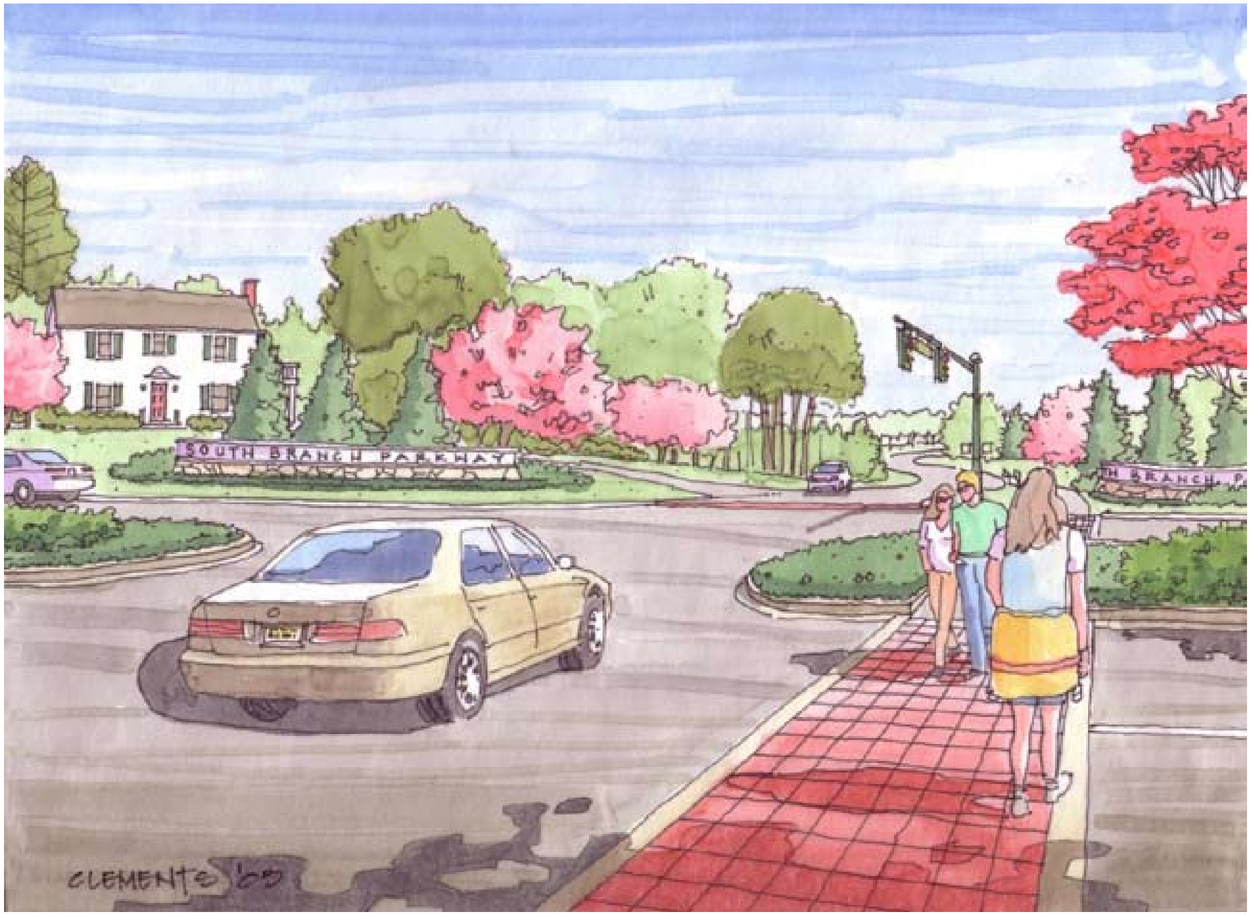
Recreational uses along the South Branch Parkway

Concept Sketch: Parkway in a Rural Setting

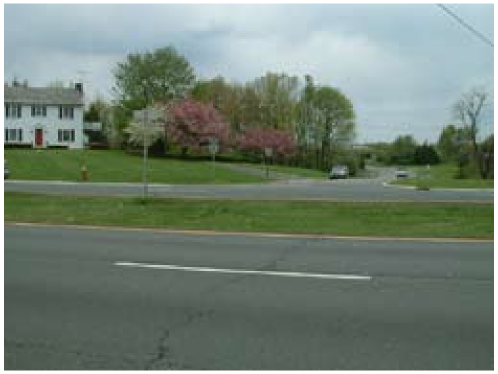
This view of the South Branch Parkway is just south of Junction Road, looking south along an existing farmstead. The at-grade, 2-lane parkway is specifically conceived to fit within this rural and natural landscape, allowing rural uses to continue while providing recreational opportunities and preserving natural views.

- Access to the Parkway can be strictly controlled through local land use policies to control the type and character of development, preserving rural uses if desired.
- A multi-use recreational trail is planned along the length of the Parkway to provide access to the area's open space and historic resources. Where possible this trail is separated from the Parkway and integrated into larger open spaces to create a linear park with passive recreational opportunities.

Existing open space and farm land along proposed South Branch Parkway



Proposed
Entrance onto the South Branch Parkway



Existing
The opportunity exists to re-configure this intersection to be the entrance to the South Branch Parkway

Concept Sketch: Gateway on Route 202

This view of the South Branch Parkway is at its intersection with Route 202. The Parkway's proposed alignment utilizes Colony Road and intersects at Route 202 with a signalized intersection at the current Colony Road/Route 202 intersection.

- This intersection creates a valuable "gateway" to the South Branch Parkway from Route 202.
- The alignment at Colony Road allows for the Parkway to extend south to Voorhees Corner Road, opening recreational access of the Parkway's trail system to the residential neighborhoods south of Route 202.

Existing Condition along Route 31

4.3 Route 31

With the future South Branch Parkway providing an alternative to Route 31 through Flemington, the design of Route 31 in Flemington should be reconsidered.

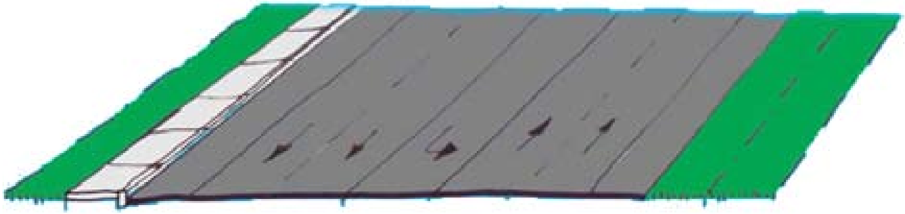
Existing Condition

Route 31 is currently a 5-lane roadway (two lanes in each direction and a center left turn lane) with expanded shoulders. Very little attention has been placed on the pedestrian environment with no consistent pattern of sidewalks and/or street trees.

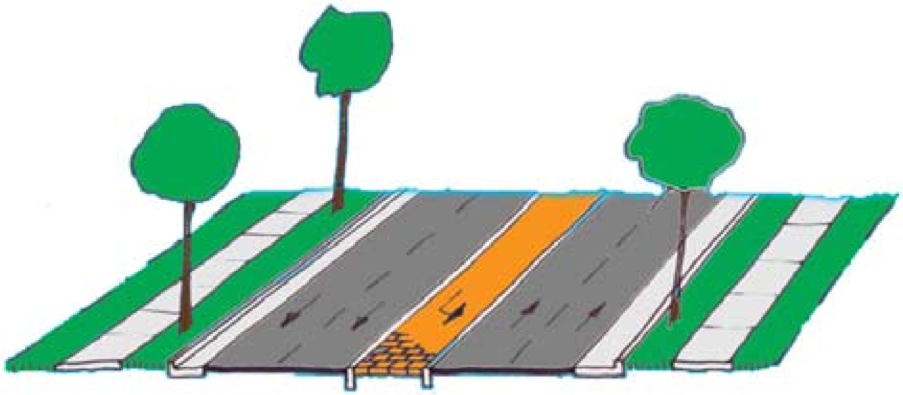
Proposed Cross Section

The Framework Plan envisions the opportunity to transform Route 31 into a more pedestrian-friendly commercial and residential corridor that can build upon and extend the character Flemington's Historic District and Main Street. To accomplish this, a future Route 31 is envisioned that maintains its 5-lane section while reconfiguring its edges to include consistent sidewalks and street trees.

- Curb and gutter on both sides of the road, allows for street trees and could be extended to accommodate bike lanes.
- Textured or contrasting material in the center left turn lane helps visually narrow the roadway and serves as a traffic calming measure.
- Tree lawn, street trees and sidewalks on both sides of the road creates a pedestrian-friendly environment.



Existing Route 31 Cross Section



Proposed Route 31 Cross Section

4.4 Route 202

The Framework Plan recognizes that Route 202 is an important east-west regional corridor. Yet, while Route 202's regional transportation function remains the same, its design and character can and should respond to the changing land use contexts it runs through.

This "transect" of Route 202 illustrates how it can adapt and transition to different land use contexts while maintaining its transportation function. Sections of Route 202 will need to be transformed based on these standards.

Rural

- Design speed: 45 + mph
- Wide shoulders
- Wide median
- Open drainage (no curb and gutter)
- Little or no landscaping

Rural to Suburban

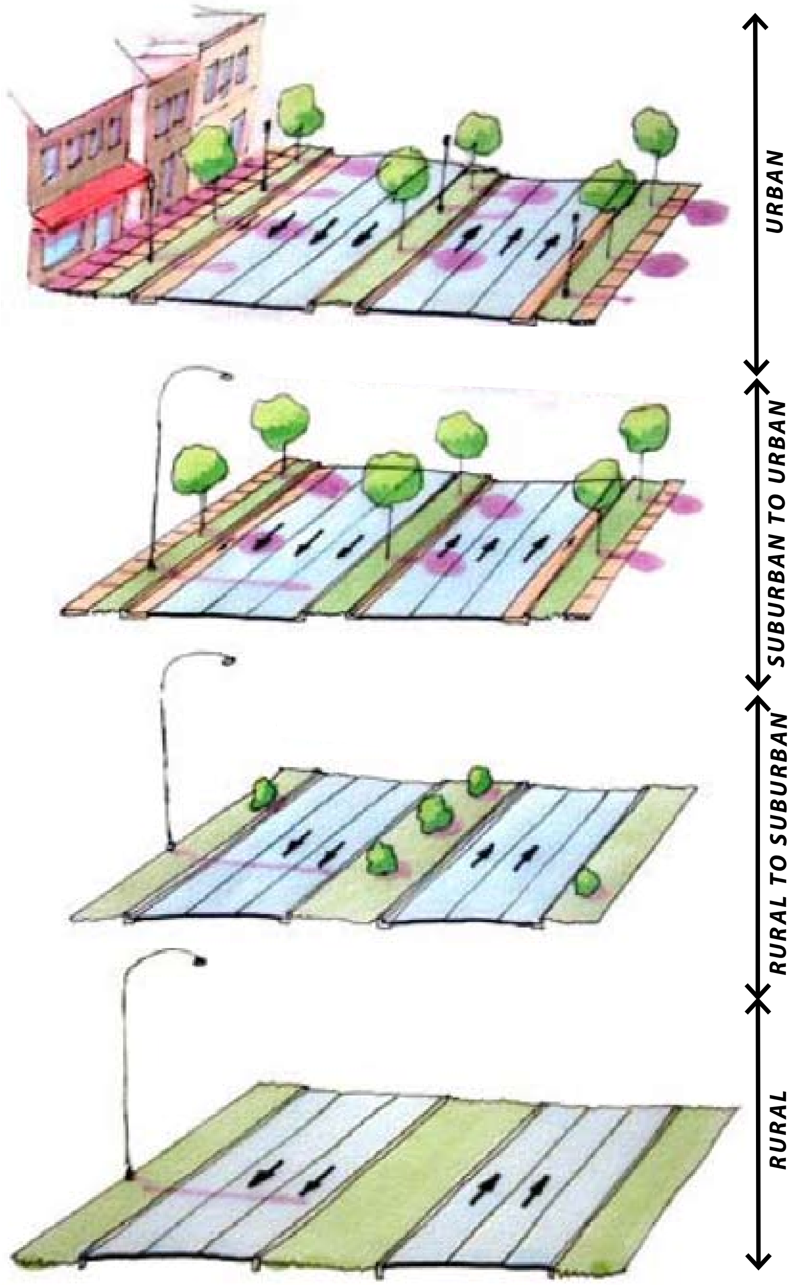
- Design speed: 35 mph
- Wide shoulders
- Wide median
- Closed drainage (curb and gutter)
- Some informal landscaping

Suburban to Urban

- Design Speed: 30 mph
- Shoulders converted into third travel lane and bicycle lanes
- Median reduced in size and formally landscaped with street trees
- Tree lawn and sidewalks added for pedestrians

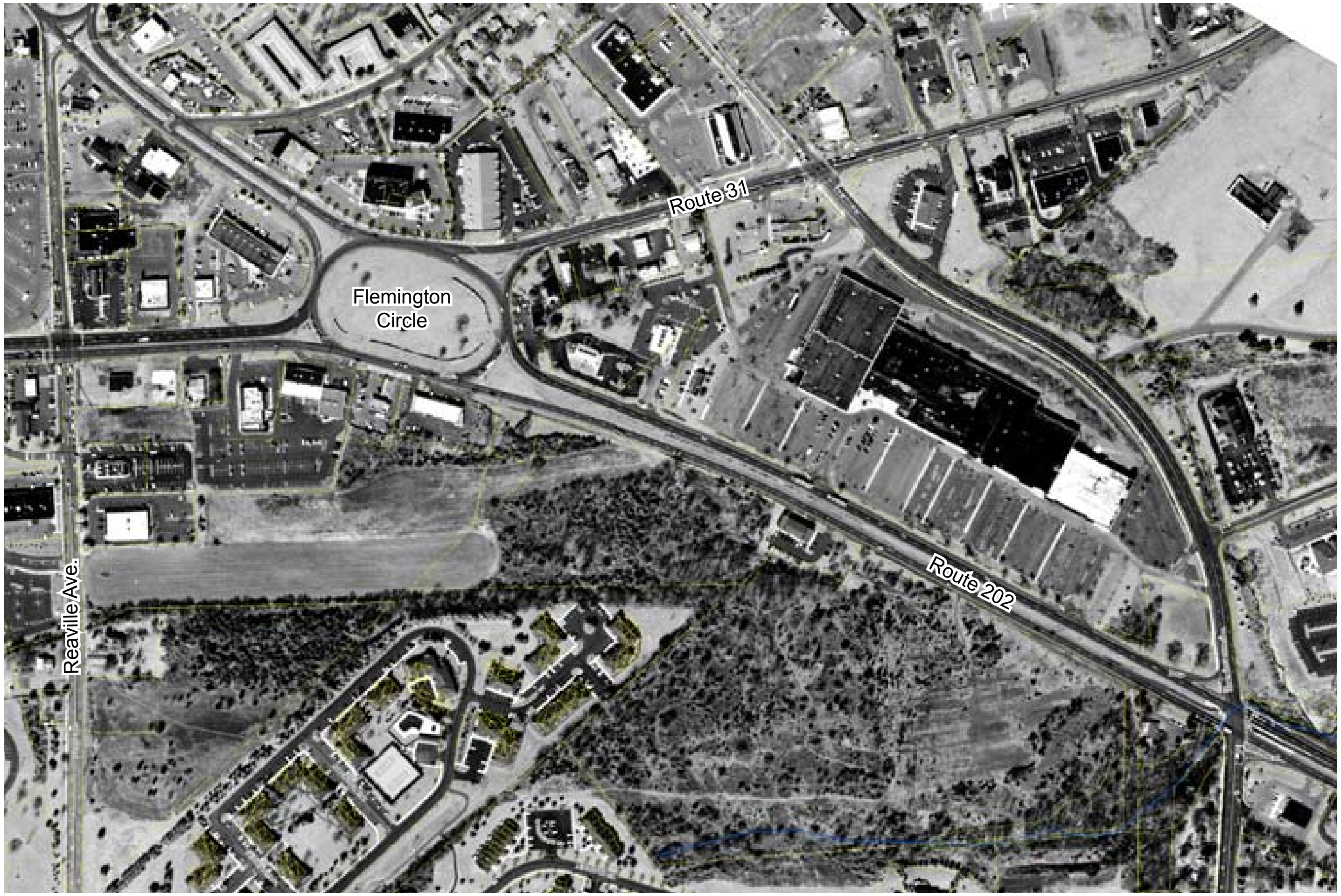
Urban (Flemington Circle)

- Design Speed: 30 mph
- Pedestrian scaled street lighting and furniture
- Site development standards that require buildings to be "built to" the street
- Wider sidewalks required with new development
- Regular spacing of signalized intersections at cross streets to maximize connectivity and manage access on the main route



4.5 Flemington Circle

The Flemington Circle intersection is an infamous traffic "hot spot" in the area. This intersection represents the confluence of three important roads; Route 202, Route 31, and Route 12. The intersection's circular design dates back to the early 1900s when these routes served the surrounding agricultural community with its relatively little traffic and when the automobile was not yet commonplace.



Existing
Aerial of Route 12 and Route 202 intersection as a traffic circle

Existing Condition

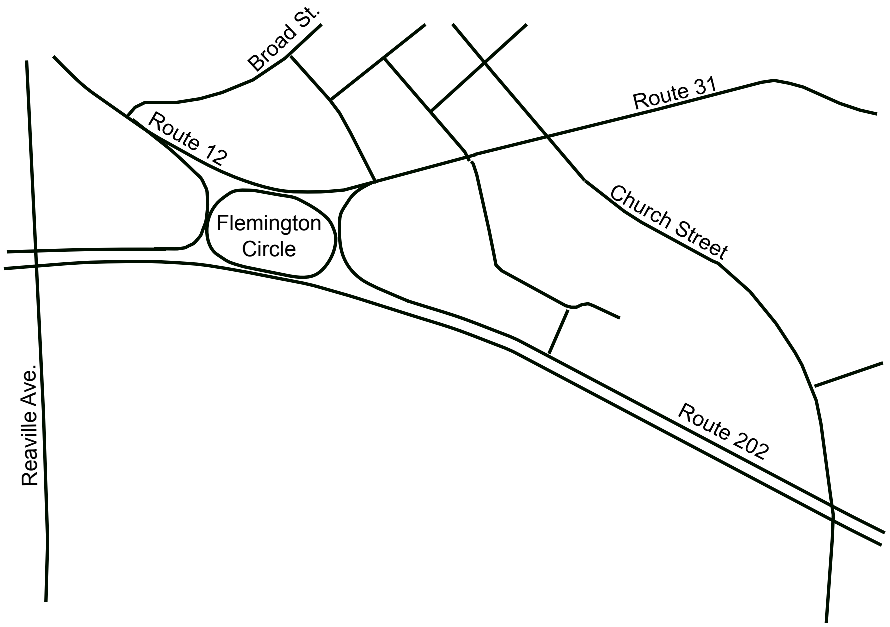
Today, the area's suburban residential and commercial growth has dramatically changed the volume and character of traffic resulting in a number of issues:

- The confluence of Route 202, Route 31 and Route 12 concentrates a significant amount of regional traffic in one location resulting in congestion and capacity issues for the Circle.
- The configuration of the Circle with free flow lanes, yield conditions and weaving between lanes creates a set of complicated and dangerous traffic movements.
- The mixing of contrasting vehicle speeds on Route 202 (fast and free flow) and those on Routes 31 and 12 (slow and stop/yield) creates an inherent safety conflict.

Proposed Reconfiguration

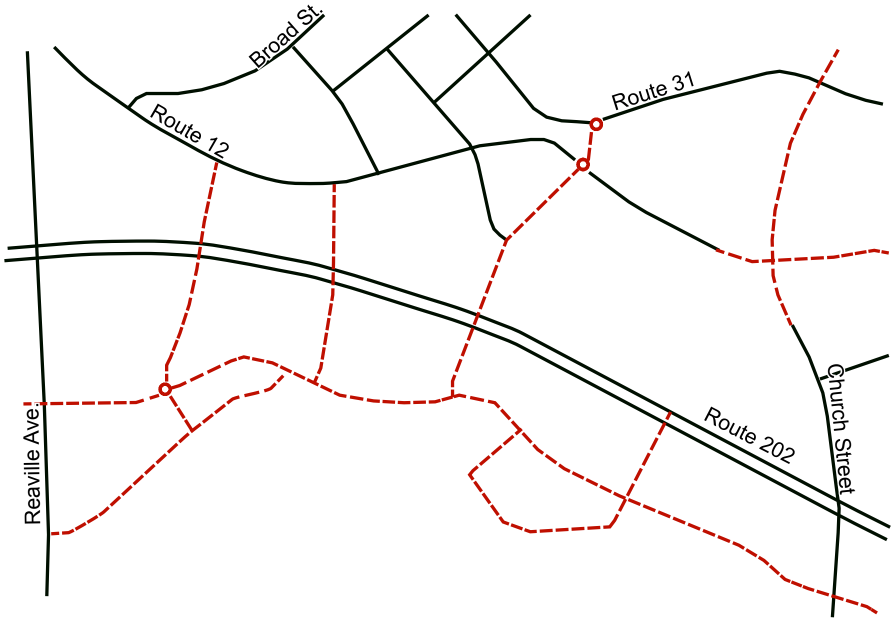
The proposed long-term solution is to "untangle" the confluence of the Circle and add new connections as the surrounding commercial area continues to develop.

- Convert the Circle to a "square", allowing a straight flow of traffic for Route 202 and signalized intersections at key locations.
- Extending Church Street to create a direct connection between Route 31 and Route 202 that does not require going through the Flemington Circle.
- Extending Route 12 to create a east-west connection to the South Branch Parkway and a continuous parallel street north of Route 202.
- Requiring a parallel connection south of Route 202 as part of commercial site development.



Existing

Street network diagram

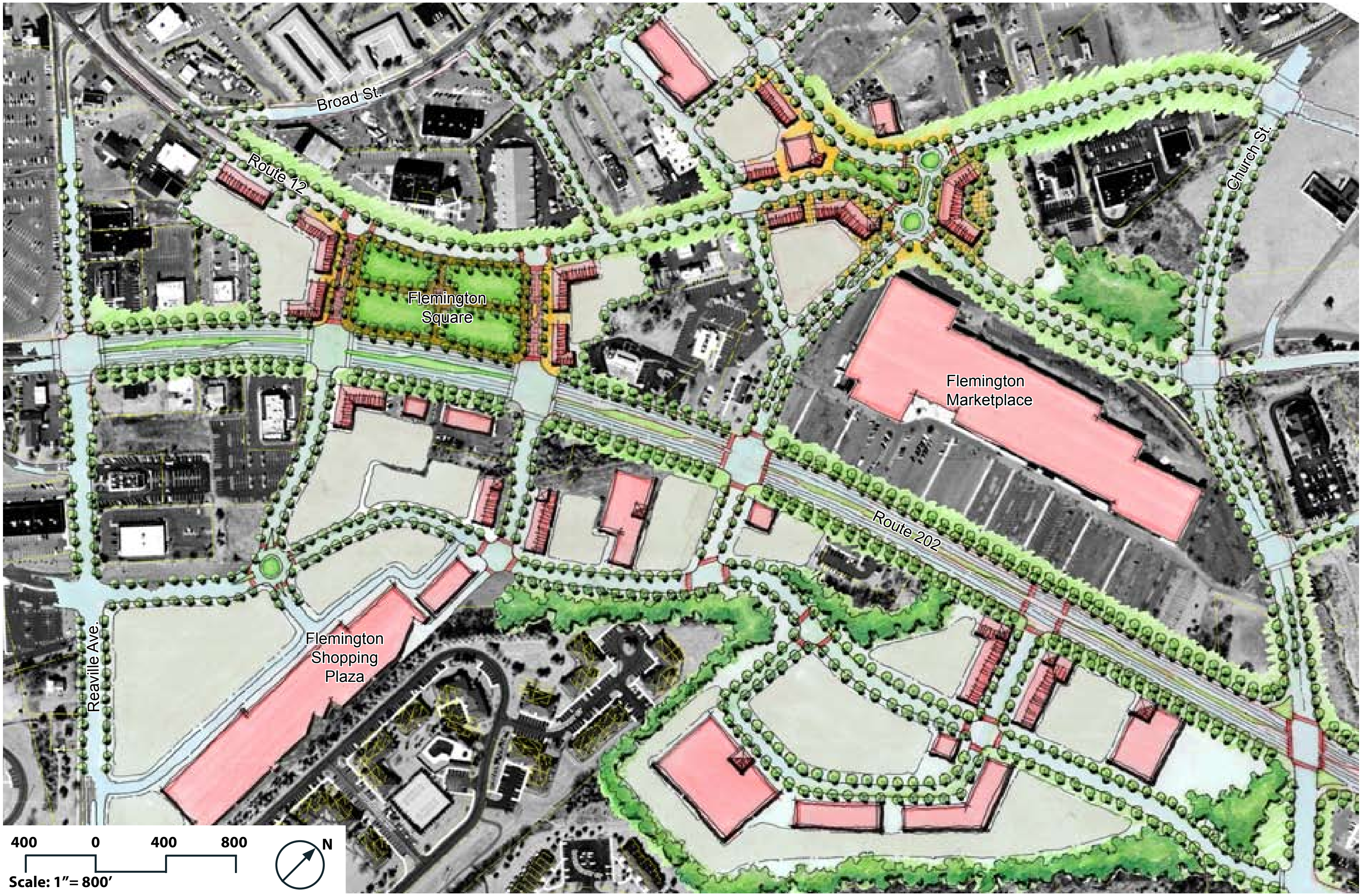


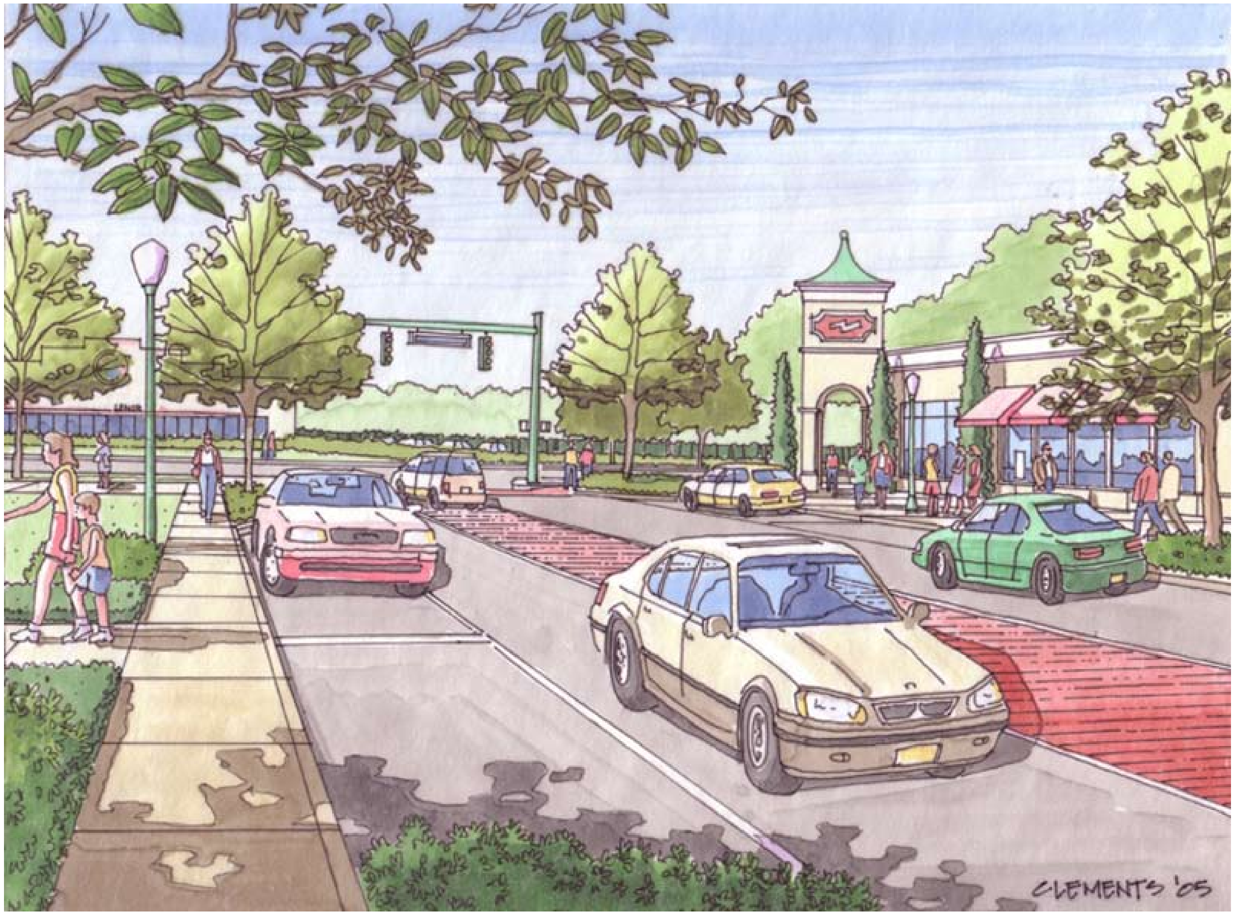
Proposed

Street network diagram after conversion to the "square"

Illustrative Development Plan

This development plan illustrates how the proposed network can fit within the context of existing and future development opportunities.


Broad St.
Route 12
Church St.
Flemington Square
Flemington Marketplace
Route 202
Reaville Ave.
Flemington Shopping Plaza
400 0 400 800
Scale: 1"= 800'
N

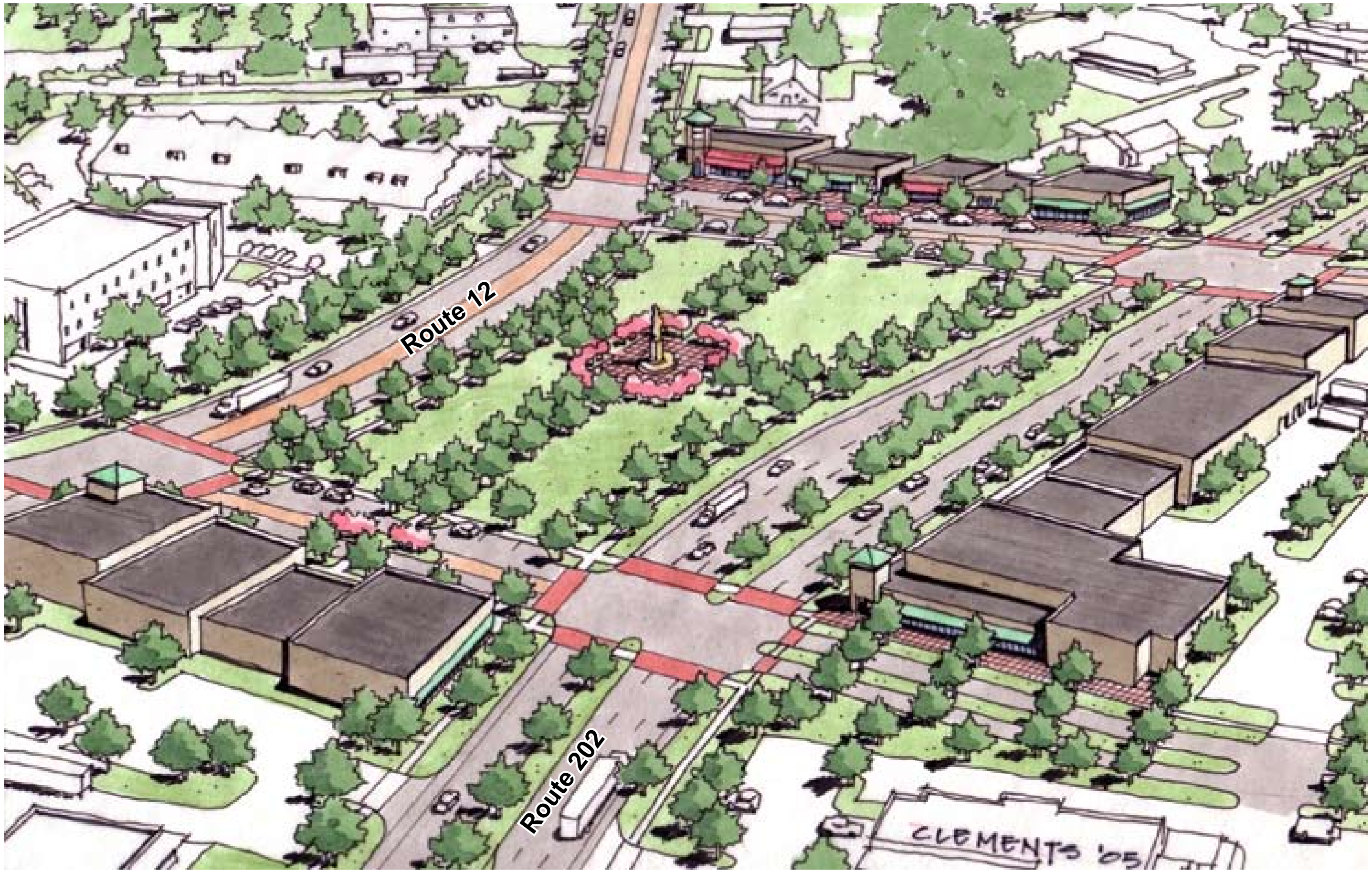


Proposed Flemington Square

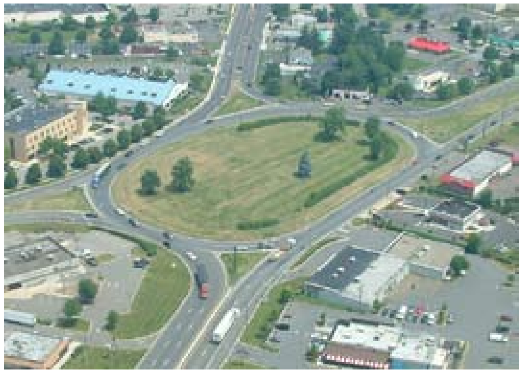
Concept Sketch: Flemington Circle to Square
(street-level view)

This sketch illustrates the opportunities made possible by the conversion of the Circle into a square. The highway-like environment of flowing traffic movements and yield conditions are transformed into a pedestrian-oriented street environment that accommodates sidewalks, on-street parking and street-oriented commercial development that frames the public "square".

Approach to the existing Flemington Circle



Proposed Flemington Square



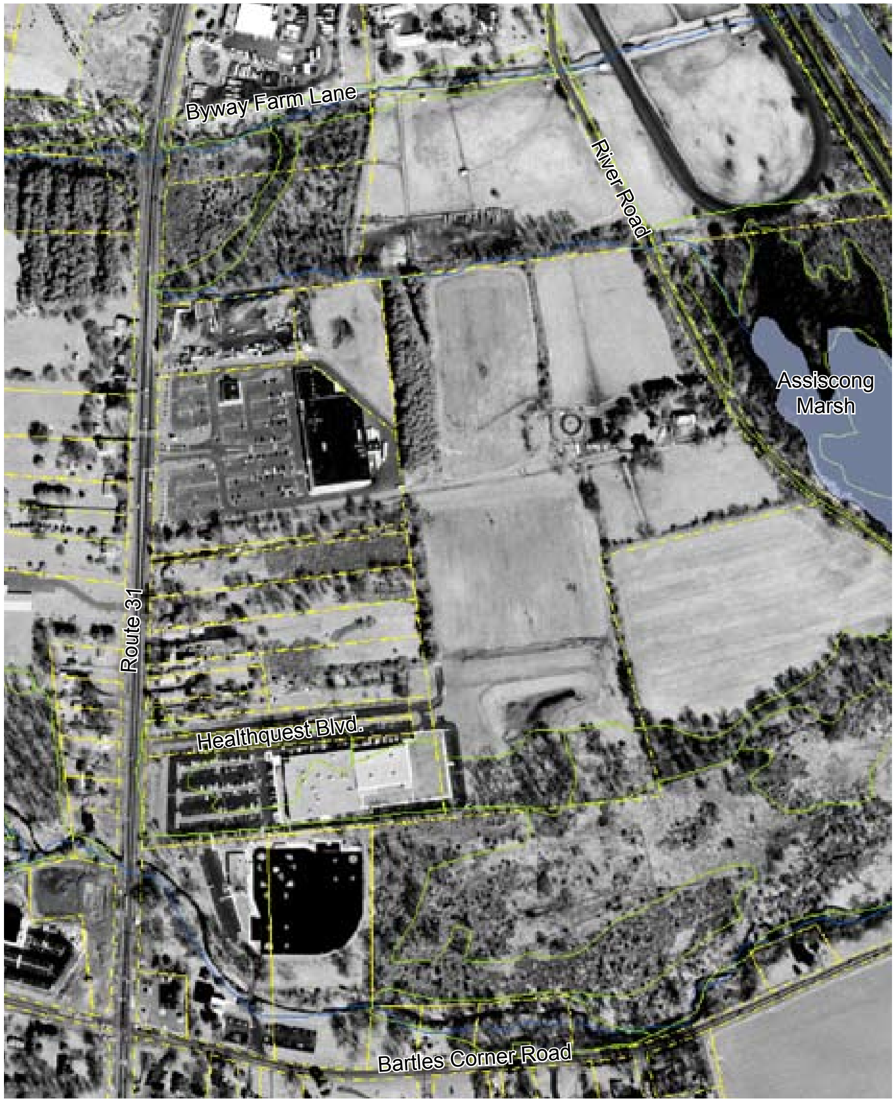
Aerial view of the existing Flemington Circle

Concept Sketch: Flemington Circle to Square
(aerial view)

This aerial view of the Circle to square conversion highlights the open space opportunities made possible by surrounding the square with safe, pedestrian-oriented streets to create a valuable and usable public space. Future redevelopment around the square can orient to the street and take advantage of this important "address". The proposed transportation system allows Route 202 to flow past the square instead of around it with the new intersections on each end operated by traffic signals.

4.6 Bartles Corner

The area bordered by Route 31, the South Branch Parkway and Bartles Corner Road represents a potential model for how to plan for future development along the Route 31 corridor while protecting the intended character and function of the Parkway.


Byway Farm Lane
River Road
Assiscong Marsh
Route 31
Healthquest Blvd.
Bartles Corner Road

Existing

Aerial image of Healthquest as it appears today

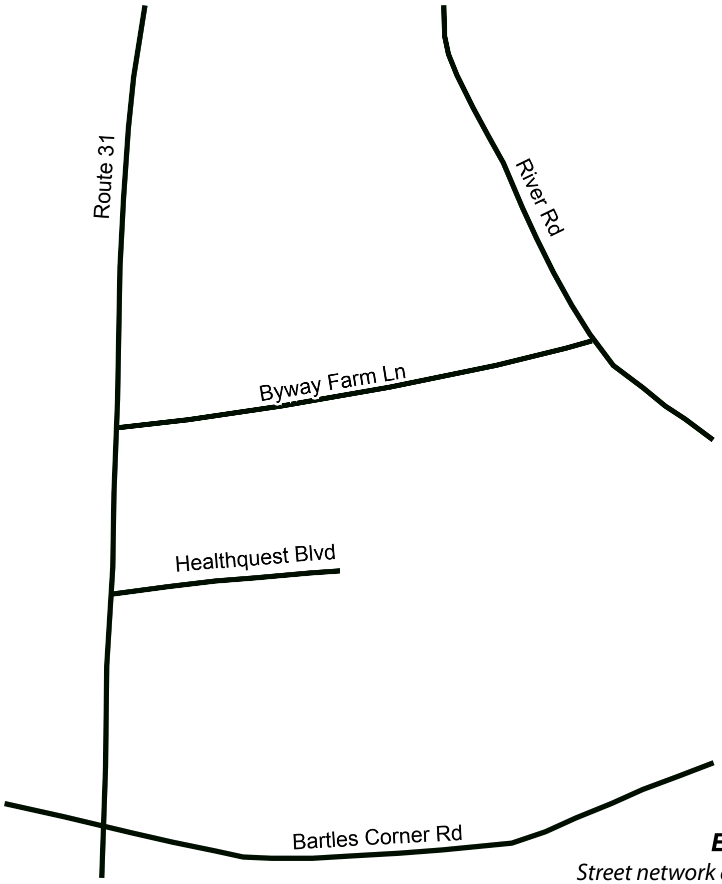
Existing Condition

This segment of Route 31 has begun the transformation from residential and agricultural lands into strip commercial development and is partial developed with a grocery store strip center and HealthQuest's Fitness Center.

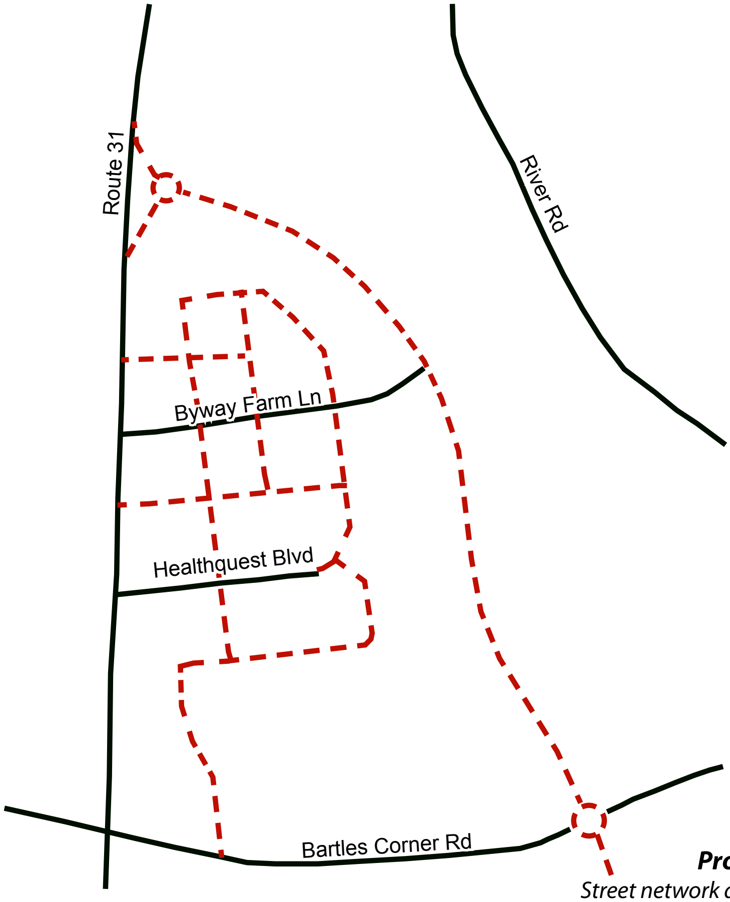
Proposed Configuration

The proposed future street network plans for future commercial development by structuring development along Route 31 into a set of streets and blocks that link existing and new development on shared connections to the South Branch Parkway, Bartles Corner Road, and Route 31.

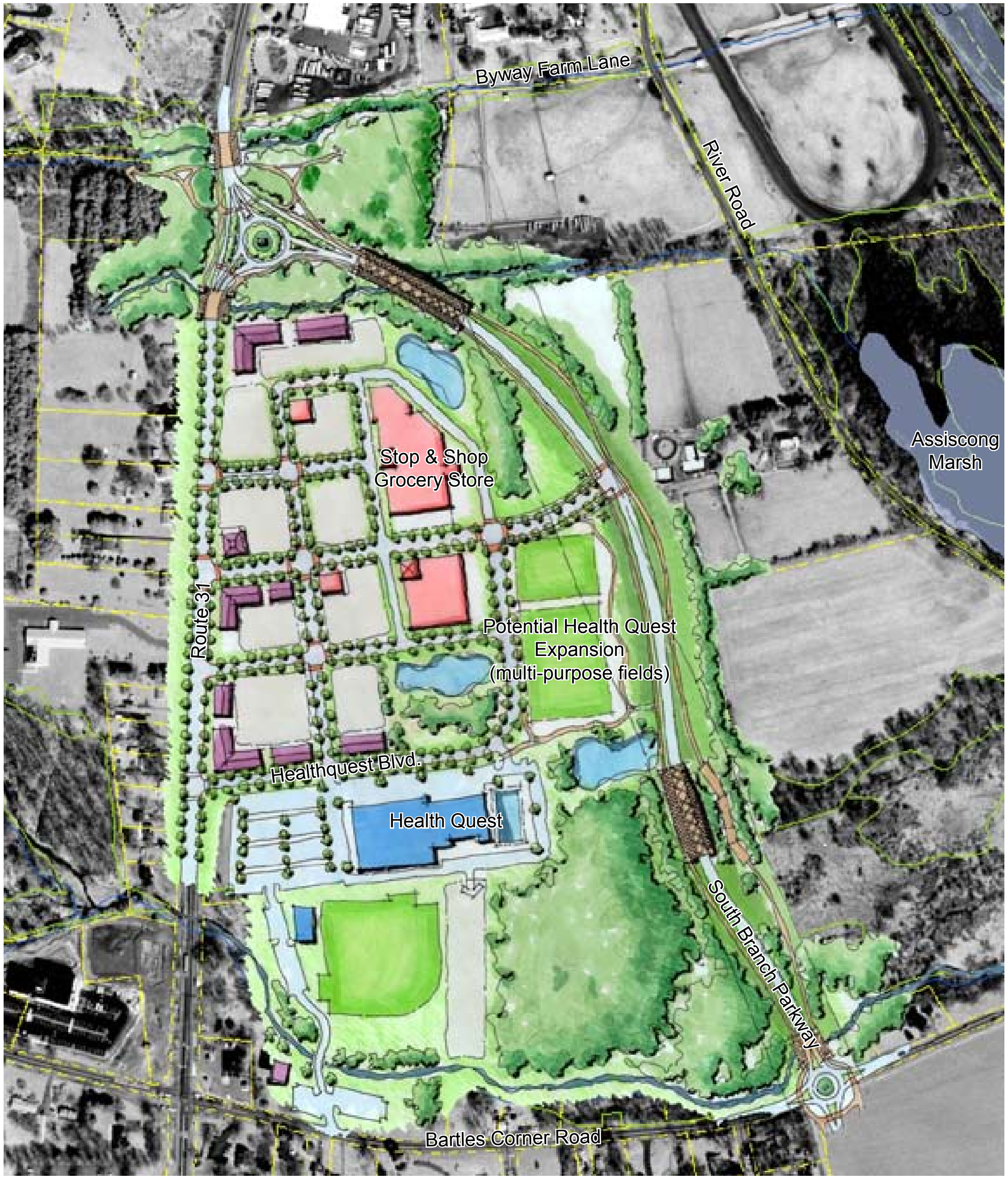
- Only one connection is proposed to the South Branch Parkway; this creates a connection to Route 31 and allows future development to access both Route 31 and the Parkway.
- All other access to the South Branch Parkway restricted in order to limit development along it and maintain its rural design character.
- New development is organized on streets and blocks that provide interconnectivity and shared access to signalized intersections.


Route 31
River Rd
Byway Farm Ln
Healthquest Blvd
Bartles Corner Rd

Existing
Street network diagram


Route 31
River Rd
Byway Farm Ln
Healthquest Blvd
Bartles Corner Rd

Proposed
Street network diagram


Byway Farm Lane
River Road
Assiscong Marsh
Stop & Shop Grocery Store
Route 31
Potential Health Quest Expansion (multi-purpose fields)
Healthquest Blvd.
Health Quest
South Branch Parkway
Bartles Corner Road

Illustrative Development Plan

This development plan illustrates how the proposed network can fit within the context of existing and future development opportunities.

- New development is organized on streets and blocks that connect to adjacent sites and share key signalized access points. All development shares access to Route 31, Bartles Corner Road, and the future South Branch Parkway.
- The network of streets and blocks also establishes a predictable pattern for future redevelopment.
- Proposed site development standards orient buildings to new streets to create a supportive pedestrian environment and place parking behind buildings in the middle of the development blocks.
- Development is oriented to Route 31 with any required open space and/or stormwater retention located along the Parkway as a buffer.

Legend

🟥 *Commerical/Retail*

🟦 *Institutional/Civic*

🟩 *Open Space/Park*

🟪 *Mixed Use (Office/Retail)*

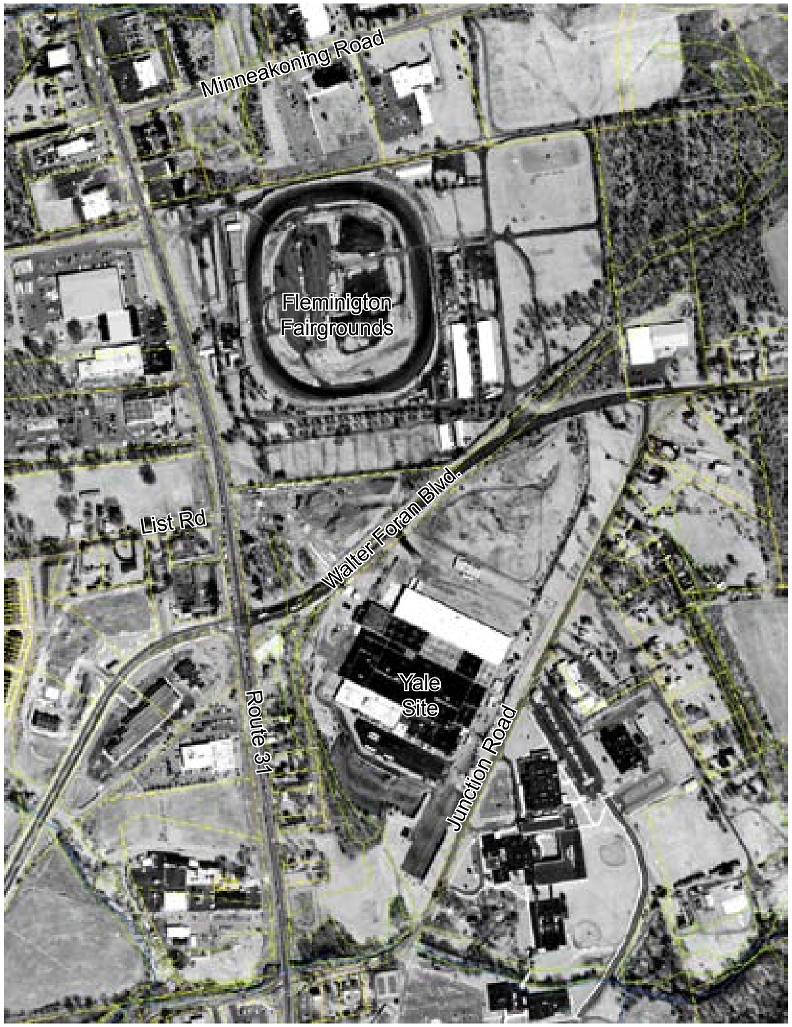
500 0 500 1,00

Scale: 1"= 500'

N

4.7 Flemington Fairgrounds

The Flemington Fairgrounds is the site of a controversial redevelopment proposal that would transform this former fairgrounds and racetrack into a commercial and office development. Immediately south of the Fairgrounds site is the Yale industrial property, a former industrial site that is also ripe for redevelopment. Together these sites represent an important opportunity to shape redevelopment along the Route 31 corridor.


Minneakoning Road
Fleminigton Fairgrounds
List Rd
Walter Foran Blvd.
Yale Site
Route 31
Junction Road

Existing
Aerial image of Flemington Fairgrounds site as it is today

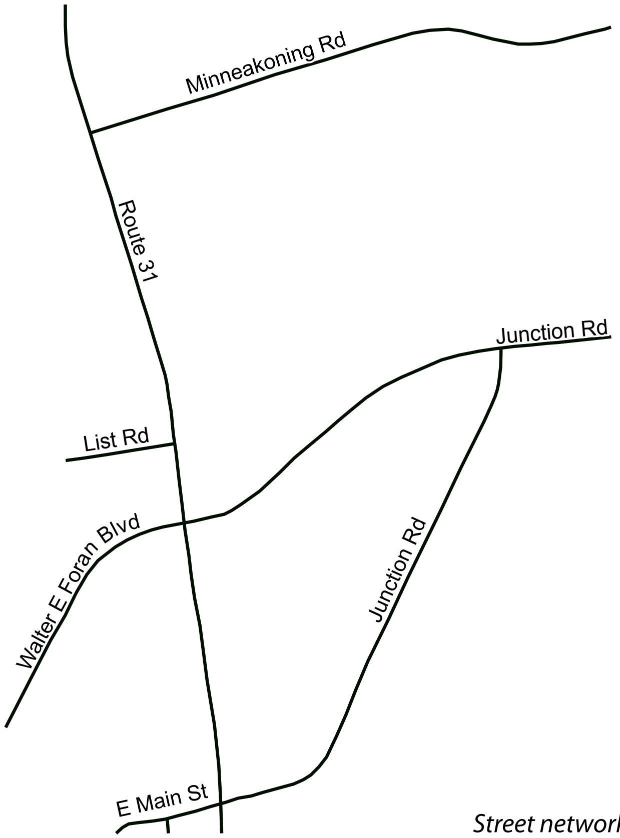
Existing Conditions

The lack of existing connectivity in this portion of Route 31 is pronounced, leaving few options for traffic and limiting most development along the corridor to access only on Route 31. Over time this will result in added congestion along the corridor.

Proposed Configuration

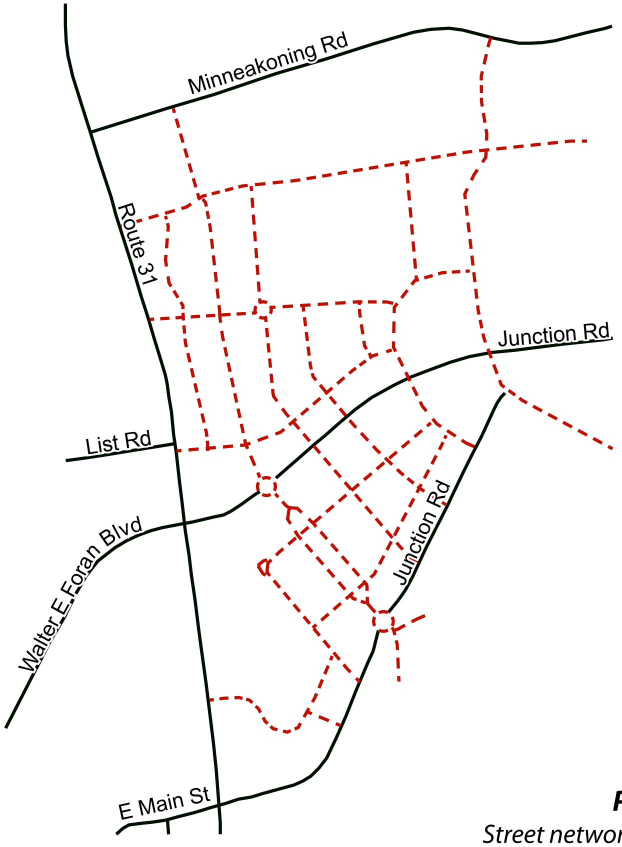
The proposed future street network identifies several important connections to maximize access and connectivity in this area and reduce the traffic dependence on Route 31. These include:

- Two connections between Minneakoning Road and Walter Foran Boulevard through the Fairgrounds site.
- A new east-west connection between Route 31 and the future South Branch Parkway on the north side of the Fairgrounds site.
- Interconnectivity between Walter Foran Boulevard and Junction Road through the Yale site via planned streets and blocks.
- A north-south connection on the east side of the Fairgrounds site that connects Minneakoning Road to Junction Road and could ultimately connect all the way to Route 202, providing a parallel connection to Route 31 and the South Branch Parkway.


Minneakoning Rd
Route 31
Junction Rd
List Rd
Walter E Foran Blvd
Junction Rd
E Main St

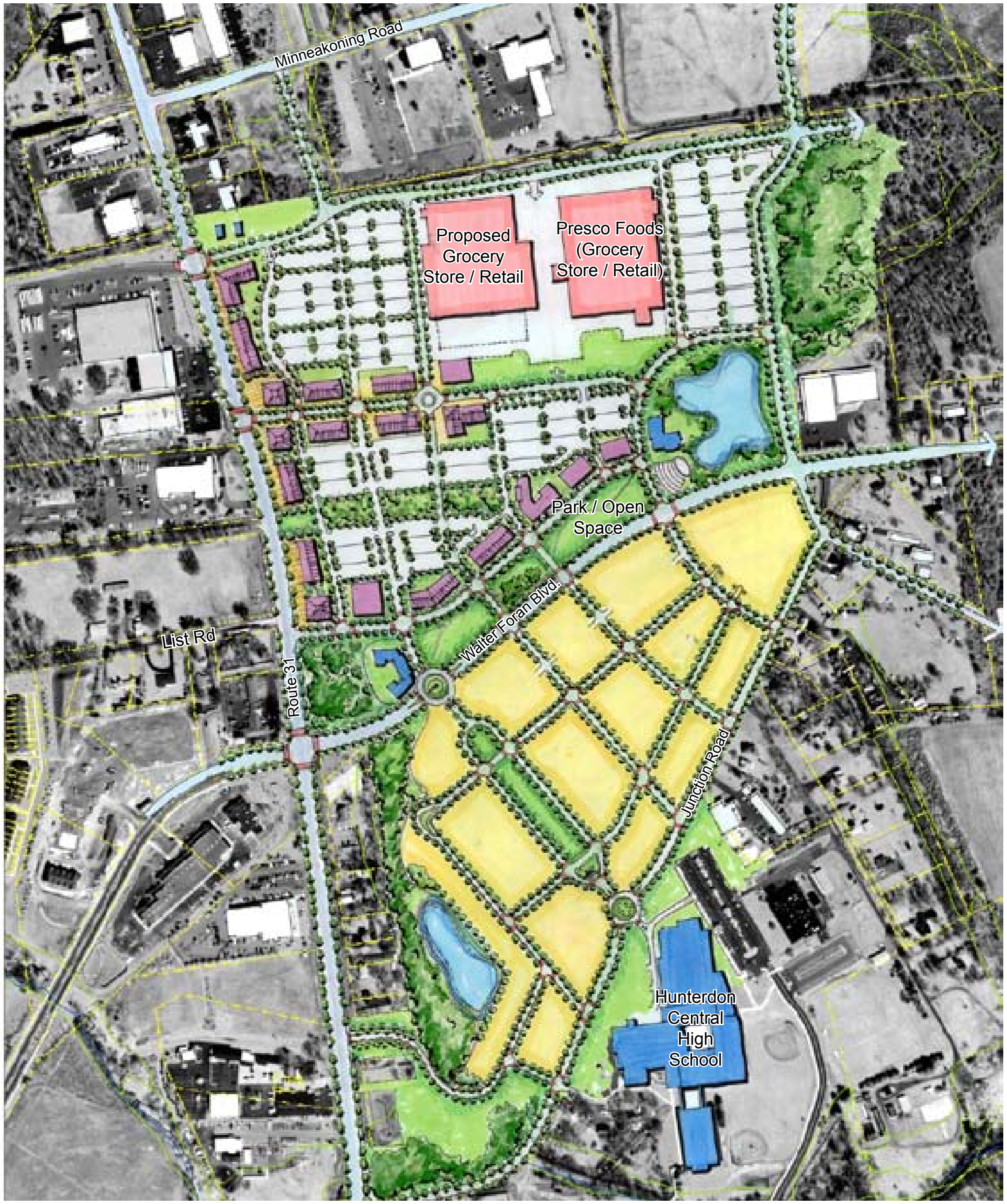
Existing

Street network diagram


Minneakoning Rd
Route 31
Junction Rd
List Rd
Walter E Foran Blvd
Junction Rd
E Main St

Proposed

Street network diagram



Minneakoning Road
Proposed Grocery Store / Retail
Presco Foods (Grocery Store / Retail)
Park / Open Space
Walter Foran Blvd.
List Rd
Route 31
Junction Road
Hunterdon Central High School

Illustrative Development Plan

This development plan illustrates how the proposed network can fit within the context of existing and future development opportunities.

- The previously proposed commercial site plan for the Fairgrounds site is modified to accommodate the proposed street connections.
- In contrast to the big box commercial development, the smaller scale commercial and office development is oriented and organized on streets and blocks, creating a series of pedestrian-oriented streets supported by blocks of parking.
- The required open space is organized into a large, usable public park, oriented along Walter Foran Boulevard to create a linear green that is anchored on both ends by future civic uses and serves as an "address" for surrounding development.
- The Yale site is organized into a series of blocks to create a residential neighborhood that links the adjacent high school and Fairgrounds site
- The resulting development plan and street network provides multiple access points in addition to Route 31, helping to balance future traffic distribution.

Legend

🟨 *Residential*

🟥 *Commerical/Retail*

🟦 *Institutional/Civic*

🟩 *Open Space/Park*

🟪 *Mixed Use (Office/Retail)*

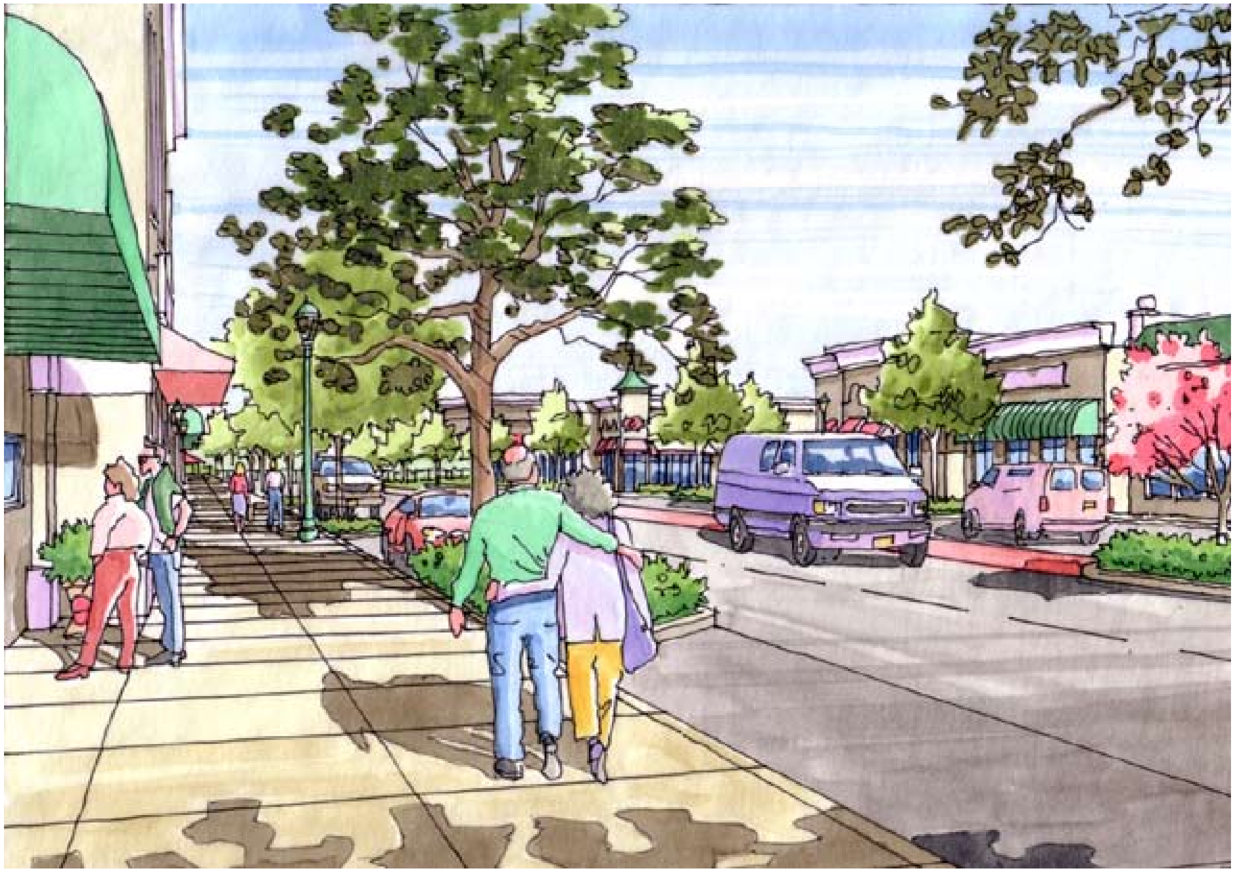
600 0 600 1,20

Scale: 1"= 600'

N

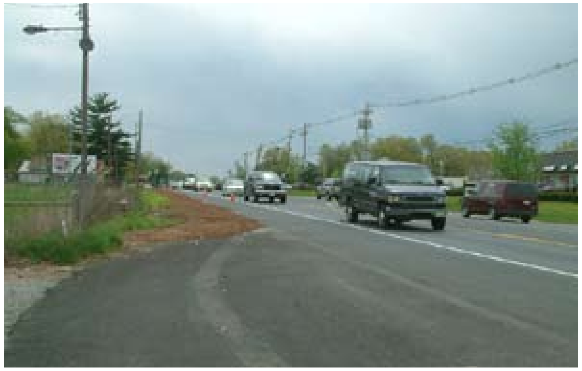
Concept Sketch: Route 31 at Flemington Fairgrounds

This sketch illustrates the potential transformation of Route 31 adjacent to the Fairgrounds site. Currently, Route 31 is an auto-oriented highway that lacks any pedestrian amenities or commercial identity. The sketch demonstrates the impact of design standards for development that would require buildings to be built to the street, sidewalks and street trees to be constructed, and the accommodation of on-street parking. These design ideas are made possible by the required street connectivity that manages access on Route 31, allowing it to serve multiple purposes (commercial business address, pedestrian corridor, parking, vehicle movement) more effectively.



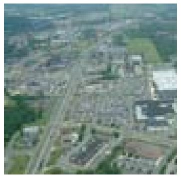
Proposed

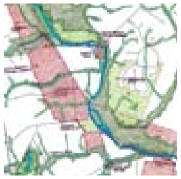
New development and streetscape along Route 31

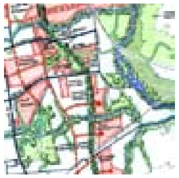


Existing

Street and pedestrian conditions along Route 31

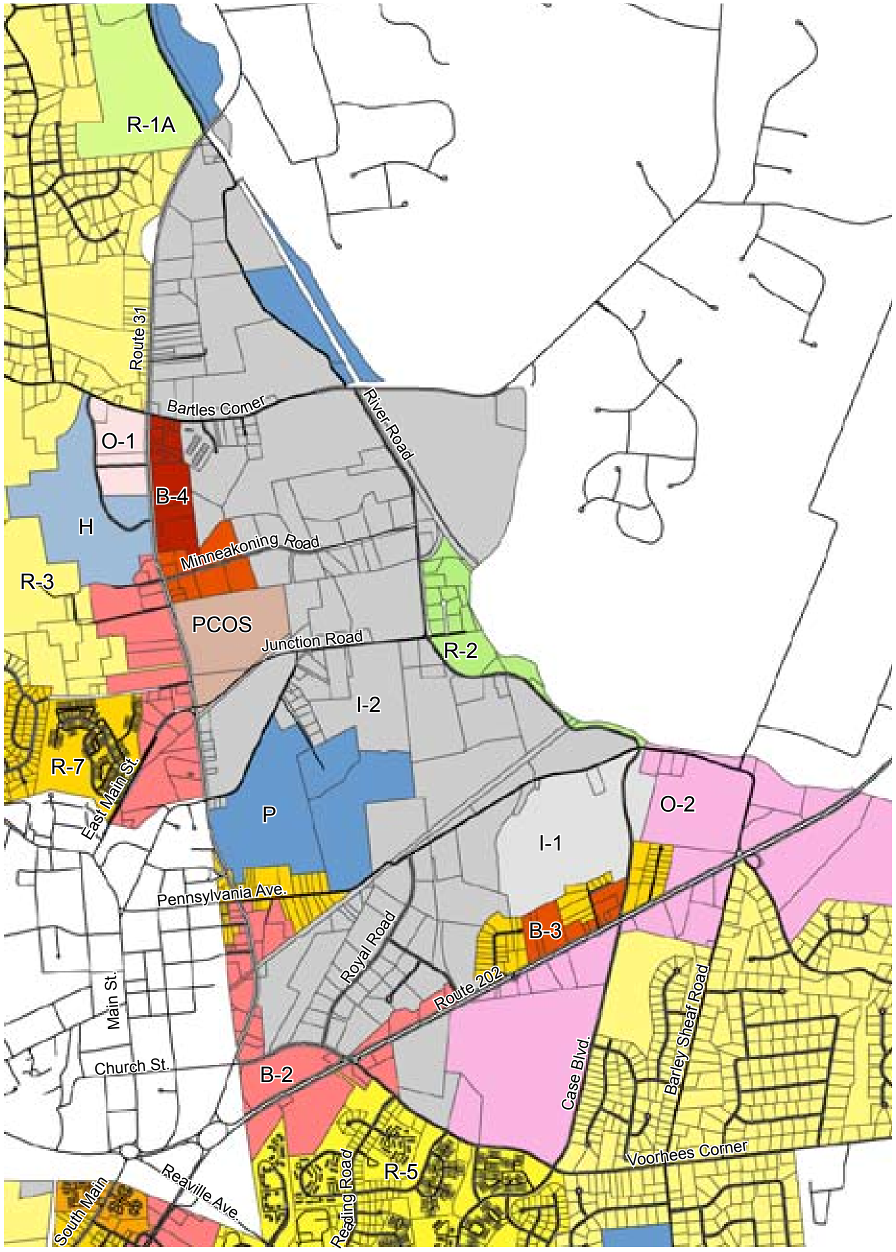






Section 5

Potential Land Use Alternatives


R-1A
Route 31
Bartles Corner
River Road
O-1
B-4
H
Minneakoning Road
R-3
PCOS
Junction Road
R-2
I-2
R-7
East Main St.
P
O-2
I-1
Pennsylvania Ave.
B-3
Royal Road
Route 202
Main St.
Church St.
B-2
Case Blvd.
Barley Sheaf Road
Voorhees Corner
Reaville Ave.
South Main
Reading Road
R-5

5.1 Market and Fiscal Impact Analysis

The implementation of the Framework Plan and the South Branch Parkway will need to integrate the role that land use will play in ensuring that the community's overall vision is achieved. A proactive vision for the area's future land use needs to be put in place in order to control and guide development in appropriate locations and not let transportation decisions dictate land use decisions. As part of this planning process a market and fiscal impact analysis, and series of land use alternatives were developed to test and illustrate potential impacts and help local community leaders make informed decisions about their future land use.

Robert Charles Lesser & Co., LLC (RCLCo) was engaged to prepare a Market and Fiscal Impact Analysis (a complete report is provided as an appendix to this document) to help guide the development of potential land use scenarios. Key conclusions of the Market and Fiscal Impact Analysis are summarized here with the goal of directing a future land use strategy that recognizes market demands, results in positive fiscal outcomes, does not overwhelm current governmental services, and helps meet existing and future affordable housing requirements.

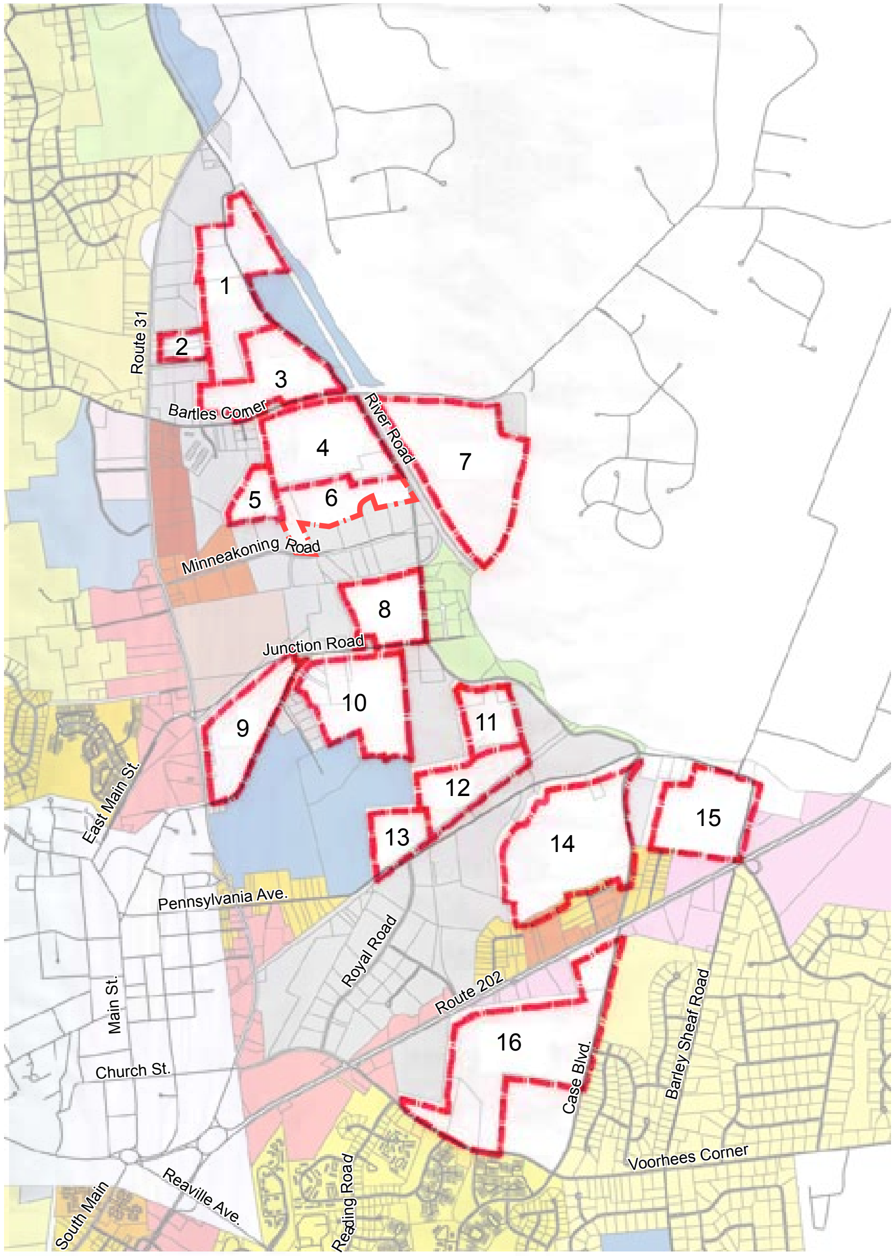
Existing Land Use

The study area between Route 31 and the South Branch of the Raritan River is predominantly zoned for industrial use due in part to the area's historic industrial connection to the river and adjacent railroads. Today, this industrial development consists mainly of flex office space and distribution/warehouse uses dependent mainly on the local road network for access.

As pointed out in the market analysis, the current market for this type of industrial/office use is relatively weak representing only about 60,000 square feet of annual development potential. With over 800 acres of land available for development, this represents between 75 to 100 years of supply.

Legend

■ *B-2*
■ *B-3*
■ *B-4*
■ *O-1*
■ *O-2*
■ *PCOS*
■ *R-1A*
■ *R-2*
■ *R-3*
■ *R-5*
■ *R-7*
■ *H*
■ *P*
■ *I-1*
■ *I-2*


1
2
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12
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15
16
Route 31
Bartles Corner
River Road
Minneakoning Road
Junction Road
East Main St.
Pennsylvania Ave.
Royal Road
Route 202
Main St.
Church St.
Case Blvd.
Barley Sheaf Road
Voorhees Corner
Reaville Ave.
South Main
Reading Road

Parcels "In-Play"

By evaluating the development pressure within the study area a number of key parcels have been identified that are considered "in-play" for future development and/or potential land use change. These are parcels that are currently zoned for industrial or office use and are either undeveloped or under-developed based on the current zoning. It is these parcels where change is possible.

Parcel	Total Acres	Percent Developable	Developable Acres	Existing Land Use	Zoning	Build-out of Current Zoning (SF)
1	68	30%	20.4	Agriculture	I-2	224,400
2	10	90%	9	Residential	I-2	99,000
3	53	0%	0	Agriculture	I-2	0
4	63	90%	56.7	Agriculture	I-2	623,700
5	13	90%	11.7	Undeveloped	I-2	128,700
6	38	50%	19	Undeveloped	I-2	209,000
7	104	50%	52	Vacant Industrial	I-2	572,000
8	37	60%	22.2	Agriculture	I-2	244,200
9	48	90%	43.2	Vacant Industrial	I-2	475,200
10	65	90%	58.5	Agriculture	I-2	643,500
11	25	90%	22.5	Residential	I-2	247,500
12	35	90%	31.5	Agriculture	I-2	346,500
13	21	90%	18.9	Agriculture	I-2	207,900
14	99	90%	89.1	Agriculture	I-2	980,100
15	76	90%	68.4	Agriculture	O-1	752,400
16	123	90%	110.7	Agriculture	O-1	1,217,700
Total	**878**	**72%**	**633.8**			**6,971,800**

Market Demand Summary

The following summarizes the key conclusions from the Market Analysis prepared by RCLCo.

Office, Flex and Industrial

Future demand projections of office, flex and industrial uses are well below the existing capacity in the study area.

- Based on employment projections the future annual net new demand for office, flex and industrial space will range from 66,000 to 78,000 square feet. At this rate the existing by-right capacity in the parcels "in-play" represents over 90 years of market demand assuming all of the demand is captured in the immediate study area.
- The office, flex and industrial market in the study area is primarily local-serving. Office demand is driven by small professional services while flex and industrial is driven by local-serving light manufacturing and distribution firms.
- The two rail lines in the study area could potentially be leveraged to attract transportation logistics and warehousing uses that can take advantage of rail access.
- Overall modest demand and absorption with little speculative development and a target market of smaller, local users.

Residential

There is a strong market opportunity to meet the demands of an under-served residential market, particularly with regards to a wider variety of housing types and price points.

- Strong demand and significant supply constraints (land use control) have created a pent-up demand and strong price increases for housing in Hunterdon County. The total depth of the future housing demand far exceeds the expected capacity.
- Historically, the local residential market has been dominated by larger lot, single-family detached product, but the opportunity exists to offer a wider variety of housing types including, small lot detached housing, townhomes and condominiums, age-restricted housing and assisted living facilities.
- A more diverse housing market would allow the area to take advantage of changing market needs such as local "empty nesters" and retirees looking to "move down" to smaller size units with less maintenance needs. In addition, State affordable housing requirements create a need to supply a range of housing opportunities in the local area.

Retail

Future retail demand will be strong, but will likely concentrate on existing retail corridors.

- The demographics in Hunterdon County, in particular the large numbers of middle-class and affluent households, are very supportive of retail development and the study area is already established as the primary community-serving retail core in the County.
- The study area will continue to be attractive to big and medium box retailers. However, the future demand for large-scale retail development will be constrained by the existing supply of most major store types and retailers, and the constrained volume of future household growth.
- Future large-scale retail development can and should continue to locate along Route 31 and Route 202.
- The retail market is currently under-served by quality restaurants and boutique retail. Flemington's Main Street should be targeted as the foundation of a vibrant and reenergized retail street.

Fiscal Impact by Land Use

The fiscal impact model developed by RCLCo calculates the net fiscal return (revenues versus costs) directly associated with new development for Raritan Township and the two school districts. This model was developed through local agency interviews and data provided by the Township and school districts (Hunterdon and Flemington-Raritan). Fiscal revenues are driven primarily by property taxes, with a small share coming from local fees, fines and sources of state aid. The fiscal expenditures for the Township are generally calculated on a per resident or employee basis, thus the costs associated with new development are driven by the number of residents and employees generated. Fiscal expenditures for the school districts have been calculated on a per student basis.

Key fiscal impact conclusions include:

- **Single-Family Detached Housing –** Net Negative (positive return for the Township, negative for schools). High property values create positive revenues for the Township but given the number of school-age students this type of housing generates, there is a negative fiscal impact on schools.

- **Townhomes –** Net Positive (slightly negative for the Township, positive for schools). The relatively lower property values do not cover the cost to the Township, yet the low student population has a net positive impact on schools. As this housing type evolves in the marketplace higher value townhomes may attract empty nesters and young professionals, which will increase the positive fiscal impact.

- **Multifamily Housing (condominiums) –** Net Positive (slightly negative for the Township, positive for schools). Condominiums have a higher value than rental and generally generate fewer students.

- **Multifamily Housing (rental apartments) –** Net Negative (negative return for the Township, negative for schools). Rental apartments generate relatively low value per unit and a higher number of students.

- **Age Restricted Housing** – Net Positive (highly positive for the Township, positive for schools). High property values driven by strong market, relatively lower numbers of residents per household, and no school children. Higher density, age-restricted housing products represent the strongest fiscal benefits, as the reduction in values per unit is off-set by the increased number of homes per acre.

- **Office** – Net Positive (negative for the Township, positive for schools). High numbers of employees relative to property values creates a negative impact on the Township, yet the lack of student generation has a positive impact on schools.

- **Industrial/Warehouse –** Net Positive (slightly positive for the Township, positive for schools). Low number of employees and no student generation.

- **Retail & Restaurants –** Net Positive (negative for the Township, positive for schools). High numbers of employees and no student generation.

Use	Net Fiscal Impact per Acre of Development, 20-year Period			
	Township	Hunterdon Schools	Flemington-Raritan Schools	Total
Single-Family Detached (Market)	$9,000	-$23,000	-$33,000	-$47,000
Townhomes (Market)	-$6,000	$75,000	$164,000	$233,000
Condominiums (Market)	-$15,000	$24,000	$81,000	$90,000
Rental Apartments	-$146,000	-$102,000	-$166,000	-$414,000
Single-Family Detached (Age-Restricted)	$26,000	$146,000	$296,000	$468,000
Townhome (Age-Restricted)	$41,000	$243,000	$494,000	$778,000
Condominium (Age-Restricted)	$56,000	$446,000	$905,000	$1,407,000
Age-Restricted SFD (Affordable)	$4,000	$88,000	$178,000	$270,000
Single-Family Detached (Affordable)	-$19,000	-$112,000	-$208,000	-$339,000
Townhome (Affordable)	-$44,000	-$16,000	-$20,000	-$80,000
Condominium (Affordable)	-$84,000	-$331,000	-$625,000	-$1,040,000
Rental Apartments (Affordable)	-$212,000	-$509,000	-$971,000	-$1,692,000
Office	-$162,000	$130,000	$264,000	$232,000
Industrial	$17,000	$75,000	$152,000	$244,000
Retail	-$16,000	$102,000	$208,000	$294,000
Restaurants	-$130,000	$115,000	$233,000	$218,000

Source: Robert Charles Lesser & Co., LLC (2006)

Development Program Fiscal Impact Analysis

The fiscal impact modeling tool is best utilized in determining the impacts of a mixed use development program, as the total net impact of the plan can be evaluated rather than individual land uses. A mix of land uses within a broader development program allows fiscally positive land uses to balance fiscally negative land uses. For the purpose of evaluating potential land use scenarios for the Framework Plan, the following hypothetical development programs were created and their fiscal impacts calculated.

Key Assumptions:

- All of these programs can fit within the available developable land in the study area and are only meant to represent a range of alternatives.
- All scenarios were constrained by existing sewer and school capacity, assuming no additional capital costs for school construction or expanded sewer system capacity.
- The fiscal impact analysis was calculated over a 20-year build-out.

Key Market and Fiscal Impact Conclusions:

- The vast majority of vacant and underutilized land adjacent to the South Branch Parkway is zoned for industrial (creating a significant oversupply given market demands for office, flex and industrial uses).
- There is a strong market opportunity for residential, particularly a wider variety of housing type and price points.
- Future retail demand will be strong, but most likely along existing retail corridors.
- Growth of all types will continue to create a demand for affordable housing (based on existing regulatory requirements).
- Sewer and school capacity are development constraints, but there is limited capacity.
- The fiscal impact on the township and school districts varies considerably by land use; a mix of land uses within a broader development program can allow fiscally positive land uses to balance fiscally negative uses to create a net neutral or positive fiscal impact.
- If planned properly, uses such as office, industrial, retail and age-restricted housing can help balance the impact of single-family and higher density, market rate housing for the township and schools.
- Single use strategies such as focusing on office and industrial will have a negative fiscal impact the Township, do not reflect realistic market conditions, and will not achieve the community’s goal of protecting open space and preserving historic resources.
- The strong market demand for certain types of new housing in the area puts the Township in a position to negotiate for additional affordable housing provisions to help with the current backlog, and protect valuable open space through clustering, conservation subdivision design, and/or open space dedication as part of new residential development.

Development Program 1: Office & Industrial

- 300,000 s.f. new office
- 900,000 s.f. new industrial
- 43 affordable housing units (need generated by COAH requirements based on program)

Fiscal Impact:

- Net impact of + $13 million over 20 years
- Negative $2.3 million on the Township (based on high number of employees and relatively low values of office and industrial.
- Positive $15 million combined for the school districts (no students generated by office and industrial uses)

Township	-$2,279000
Hunterdon Schools	$5,019,000
Flemington-Raritan Schools	$10,365,000
Total	$13,105,000

Development Program 2: Multiple Use with Primary Housing

- 300,000 s.f. new office
- 900,000 s.f. new industrial
- 90 single-family detached homes
- 600 townhomes
- 129 affordable housing units (need generated by COAH requirements based on program)

Fiscal Impact:

- Net impact of + $30 million over 20 years
- Negative $2.6 million on the Township (based on the employment of the office/industrial plus the additional townhomes)
- Positive $32 million combined for the school districts (office, industrial and townhome uses balance the negative impact of single-family homes)

Township	-$2,641,000
Hunterdon Schools	$10,160,000
Flemington-Raritan Schools	$22,600,000
Total	$30,119,000

Development Program 3: Multiple Use with Age-Restricted Housing

- 300,000 s.f. new office
- 900,000 s.f. new industrial
- 90 single-family detached homes (age-restricted)
- 600 townhomes (age-restricted)
- 129 affordable housing units (need generated by COAH requirements based on program)

Fiscal Impact:

- Net impact of + $95.7 million over 20 years
- Positive $1.8 million on the Township (based on age-restricted housing generating less residents per unit as compared to Development Program 3)
- Positive $93 million combined for the school districts (none of the proposed uses generate students)

Township	$1,815,000
Hunterdon Schools	$30,905,000
Flemington-Raritan Schools	$63,015,000
Total	$95,735,000

Development Program 4: Multiple Use with Mixed Housing

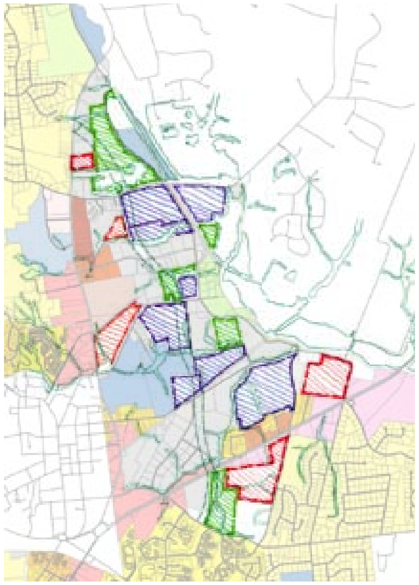
- 300,000 s.f. new office
- 900,000 s.f. new industrial
- 390 single-family detached homes (half age-restricted)
- 380 townhomes (half age-restricted)
- 140 affordable housing units (need generated by COAH requirements based on program)

Fiscal Impact:

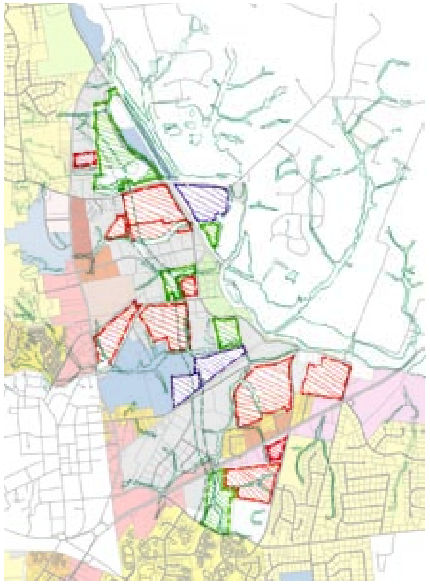
- Net impact of + $70.3 million over 20 years
- Positive $900,000 on the Township (based on a mix of age-restricted and primary housing)
- Positive $69 million combined for the school districts (balanced housing program with townhome, single family and age-restricted)

Township	$986,000
Hunterdon Schools	$22,259,000
Flemington-Raritan Schools	$47,069,000
Total	$70,314,000

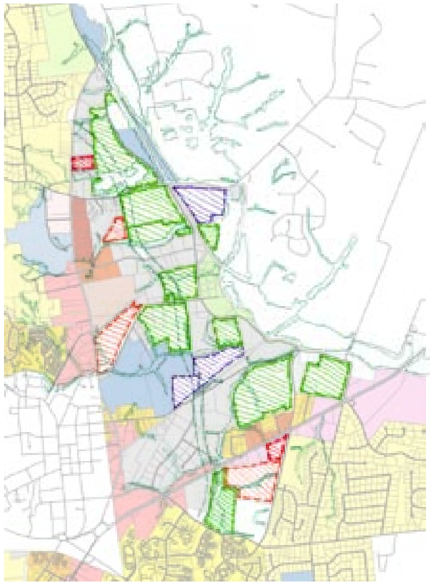
Source: Robert Charles Lesser & Co., LLC (2006)



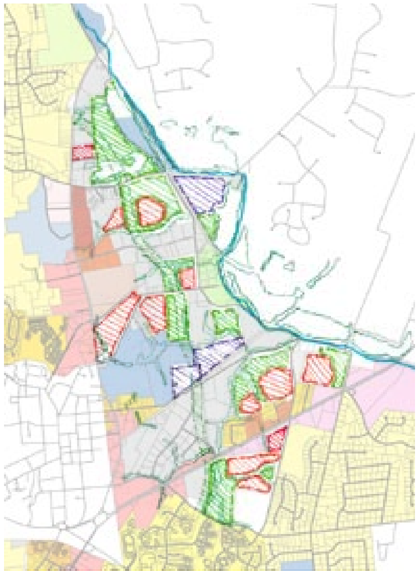
Industrial Concept



Residential Concept



Open Space Concept

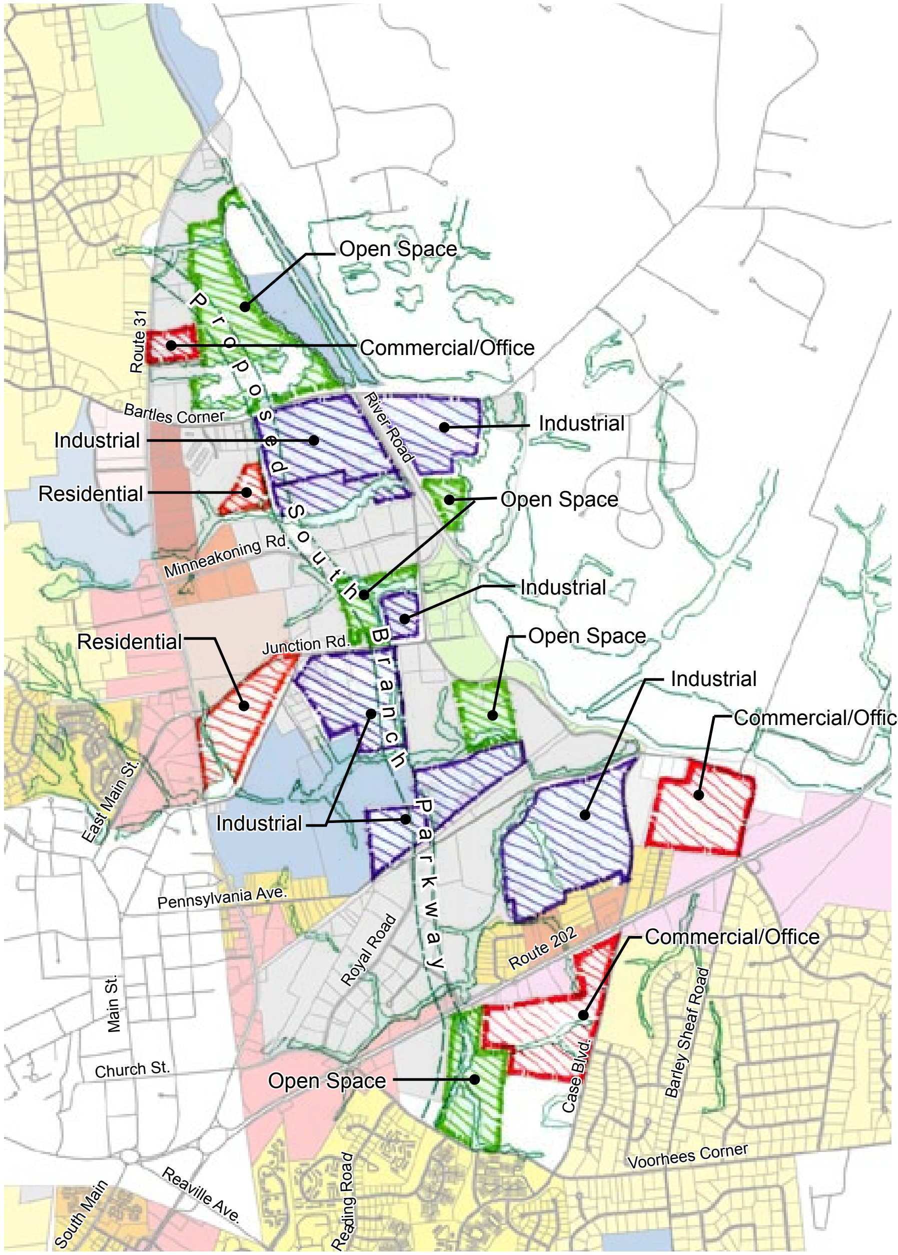


"Hybrid" Concept

5.2 Land Use Alternatives

As the fiscal analysis illustrates, there are a number of development programs possible that can be crafted to create a positive fiscal return for both the Township and school districts. The development programs, while constrained by market conditions and school and sewer capacity, were intended only to illustrate a hypothetical range of development programs possible that would result in a positive fiscal outcome.

For the purposes of illustrating how a balanced land use approach could be applied to the specifics of the study area, a sequence of land use scenarios were developed. These scenarios are focused on potential land use changes for the parcels "in-play" (undeveloped lands within the immediate study area). The sequence of scenarios lead to a "hybrid" concept that attempts to assimilate a number of community goals identified during this process while providing a balanced land use approach. The Hybrid Concept is intended to set the stage for a future land use vision, informing a more comprehensive local land use planning process as a next step to implementing the Framework Plan.

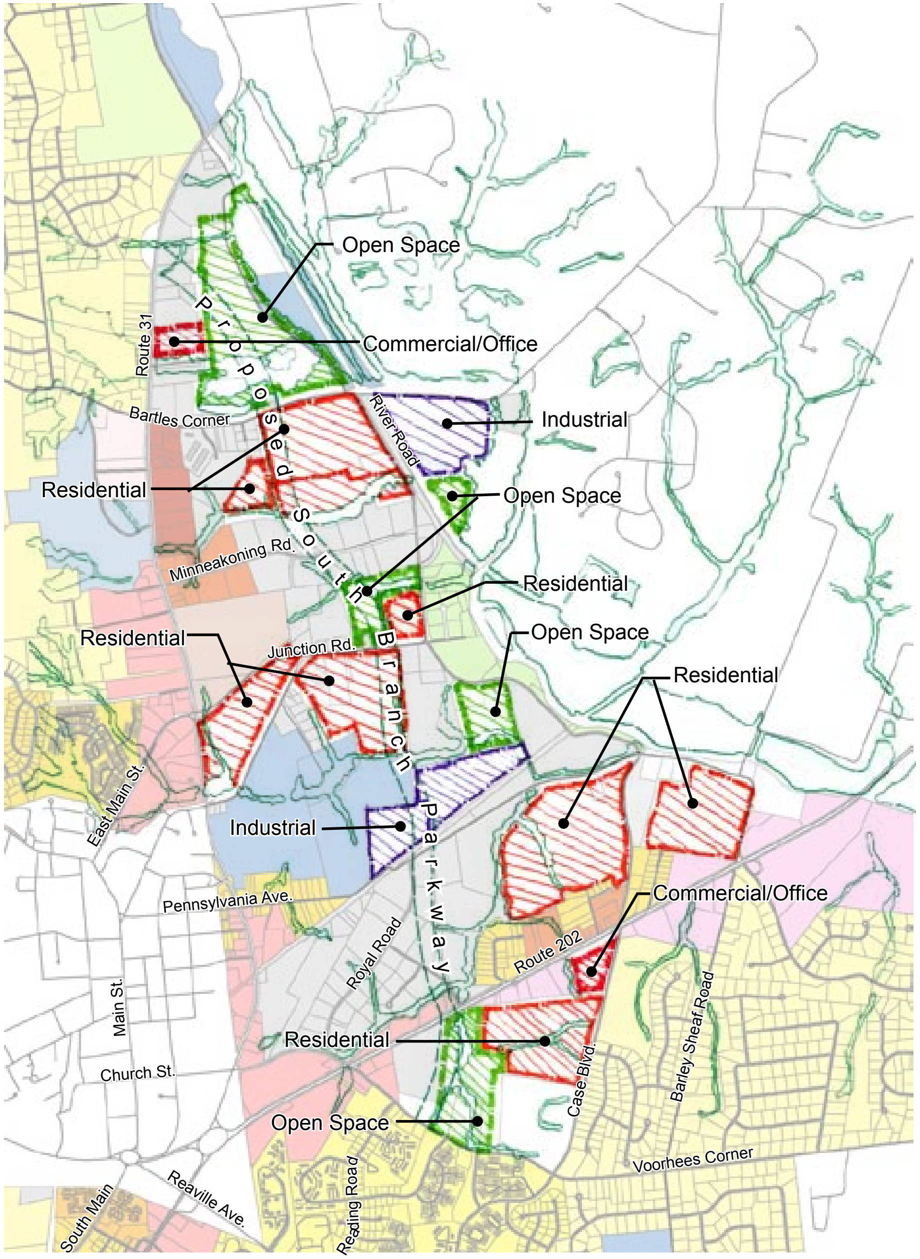

Open Space
Route 31
Commercial/Office
Proposed South Branch Parkway
Bartles Corner
River Road
Industrial
Industrial
Residential
Open Space
Minneakoning Rd.
Industrial
Residential
Junction Rd.
Open Space
Industrial
Commercial/Office
East Main St.
Industrial
Pennsylvania Ave.
Royal Road
Route 202
Commercial/Office
Main St.
Barley Sheaf Road
Church St.
Open Space
Case Blvd.
Voorhees Corner
Reaville Ave.
South Main
Reading Road

Industrial Concept

The industrial land use concept assumes a build-out of the parcels "in-play" as industrial and/or flex office use consistent with the existing zoning.

Issues/Opportunities:

- Consistent with existing zoning
- With low market demand, development will happen slowly over a long period of time
- This build-out will, over time, eliminate much of the area's undeveloped open space
- This type of industrial and flex office development will have a relatively neutral fiscal impact – not as high a value as retail or class A office
- Creates additional affordable housing requirement that will need to be accommodated somewhere in the Township


Open Space
Route 31
Commercial/Office
Proposed South Branch Parkway
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River Road
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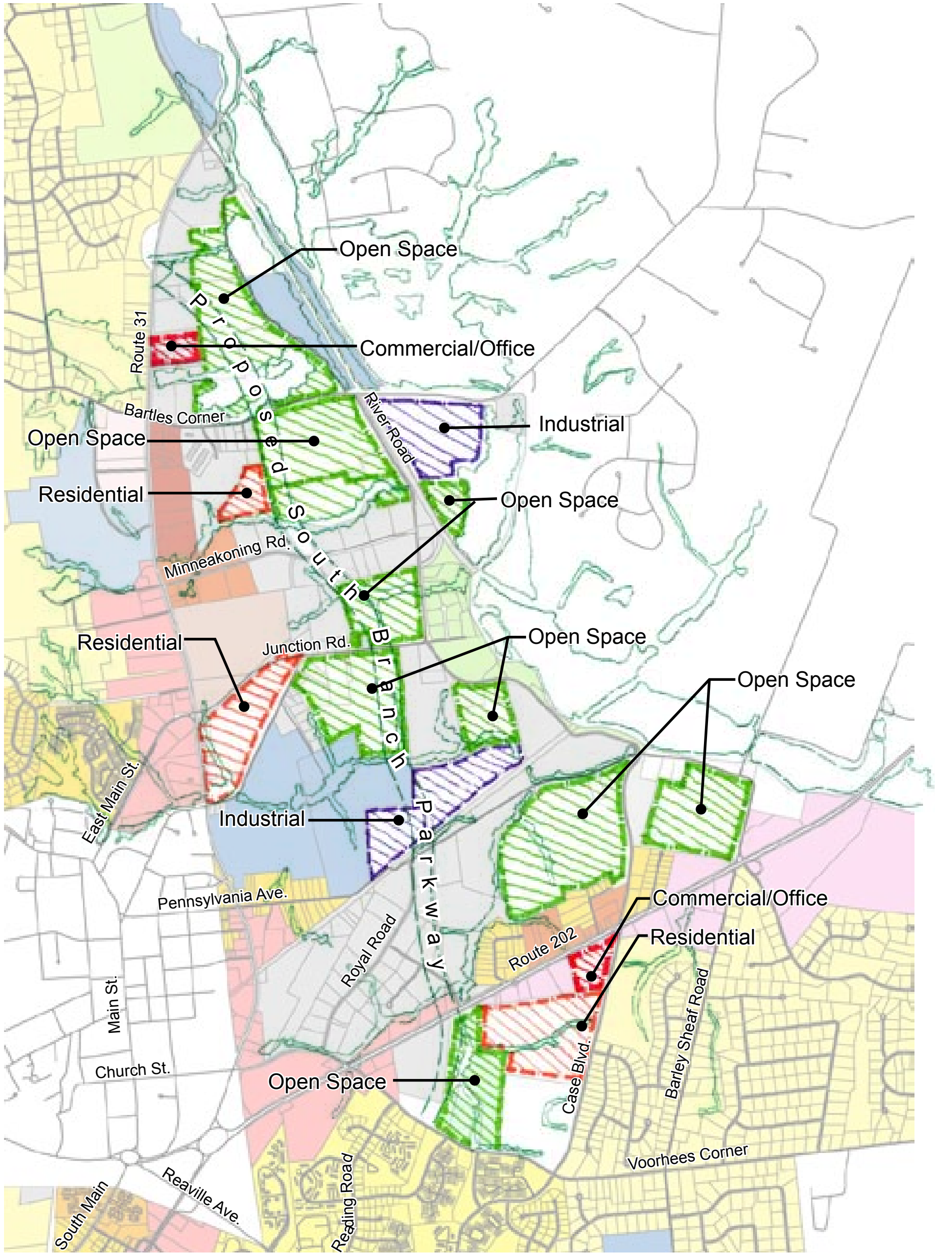
Residential
Open Space
Minneakoning Rd.
Residential
Residential
Junction Rd.
Open Space
Residential
East Main St.
Industrial
Commercial/Office
Pennsylvania Ave.
Royal Road
Route 202
Main St.
Residential
Church St.
Case Blvd.
Barley Sheaf Road
Open Space
Voorhees Corner
Reaville Ave.
South Main
Reading Road

Residential Concept

The residential land use concept assumes opening up the parcels "in-play" for residential development based on the current strong residential market.

Issues/Opportunities:

- Responds to existing residential market demand
- Could help solve affordable housing backlog through added provision on new development
- Full build-out would exceed existing sewer and school capacity
- There is minimal provision for open space protection

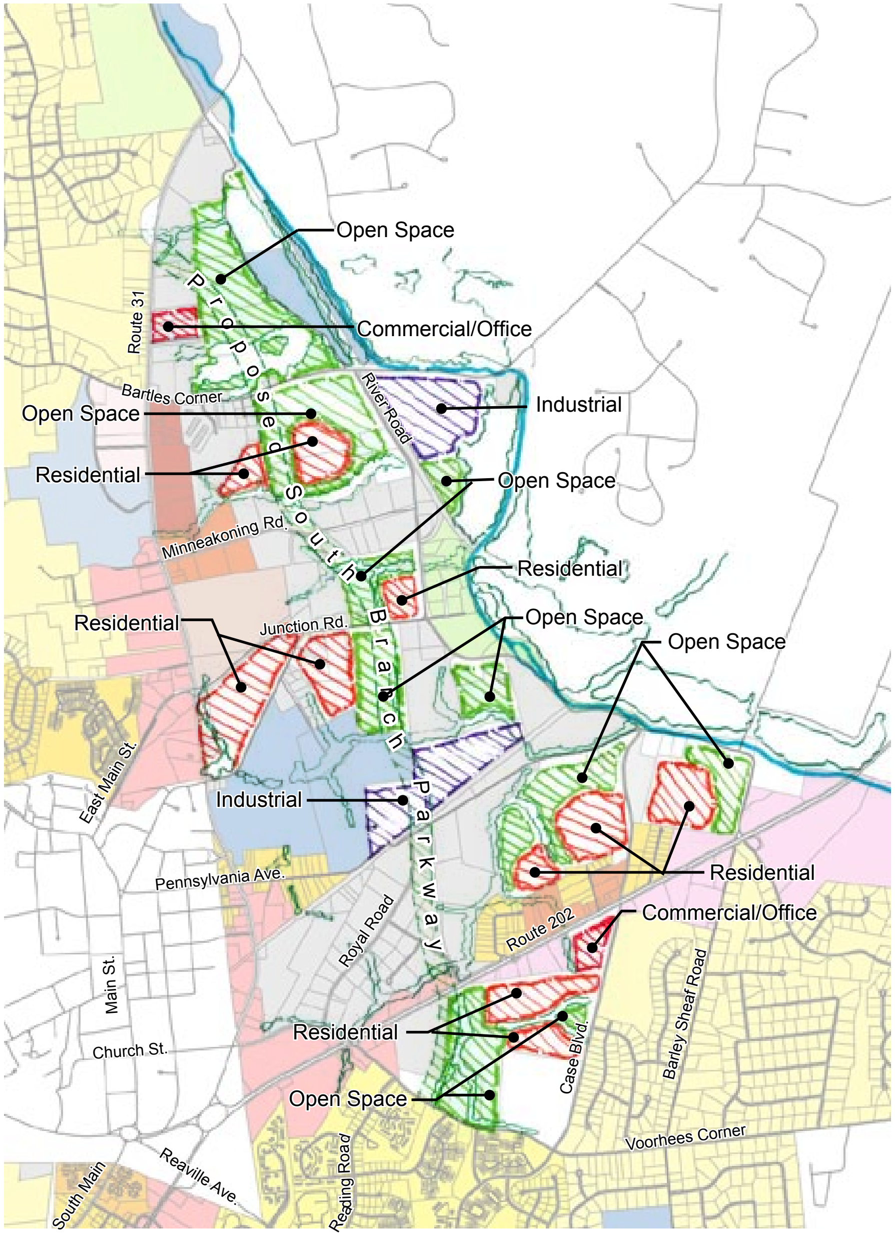

Open Space
Route 31
Commercial/Office
Proposed South Branch Parkway
Bartles Corner
River Road
Industrial
Open Space
Open Space
Residential
Minneakoning Rd.
Residential
Junction Rd.
Open Space
Open Space
East Main St.
Industrial
Pennsylvania Ave.
Royal Road
Route 202
Commercial/Office
Residential
Main St.
Church St.
Open Space
Case Blvd.
Barley Sheaf Road
Voorhees Corner
Reaville Ave.
South Main
Reading Road

Open Space Concept

The open space concept assumes formally protecting the area's undeveloped and agricultural land as open space.

Issues/Opportunities:

- Fulfills community's desire to protect open space
- May be financially impossible to purchase all lands identified
- Does not help solve existing affordable housing backlog
- Ignores potentially valuable market opportunities and tax base growth


Open Space
Route 31
Commercial/Office
Proposed South Branch Parkway
Bartles Corner
Open Space
River Road
Industrial
Residential
Open Space
Minneakoning Rd.
Residential
Residential
Junction Rd.
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Open Space
East Main St.
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Residential
Pennsylvania Ave.
Royal Road
Route 202
Commercial/Office
Main St.
Church St.
Residential
Open Space
Case Blvd.
Barley Sheaf Road
Voorhees Corner
Reaville Ave.
South Main
Reading Road

“Hybrid” Concept

The hybrid land use concept represents an alternative land use scenario that attempts to balance the range of issues and opportunities identified in the previous land use concepts. These issues and opportunities include; fiscal impact to the Township, school and sewer capacities, affordable housing requirements, the community’s desire to protect natural and historic resources, and current residential market opportunities.

Principles:

Establish Protected Open Space Corridors

- Create an open space corridor along the Parkway by establishing large development setbacks
- Protect open space corridors along the area’s creeks and streams by requiring additional development setbacks (and/or easements) and locating required open space adjacent to these existing natural systems

Identify Areas for Open Space Protection

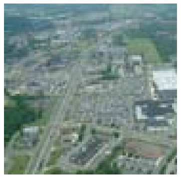
- Identify and target important sites in the area (historic farmsteads, scenic viewsheds, areas along the South Branch River or other creeks and streams) for formal open space protection via Township purchase

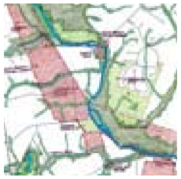
Utilize the Parkway as the Growth Boundary between the “Town” and the River

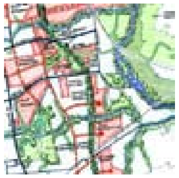
- Focus development west of the Parkway and discourage development east of the Parkway

Focus Development on Key Sites

- Cluster new development and require significant open space protection
- Utilize this development to accommodate the Township’s affordable housing backlog







Section 6

Traffic Analysis

6.1 Introduction

In November 2004, a traffic modeling effort was undertaken, the goal of which was to evaluate the interactive effects of new roadway connections as proposed by the visioning plan and future development along the NJ Route 31 Corridor in Raritan Township and Flemington Borough. Given the complexities of the transportation system and the size of the study area, simple methods for generating and distributing traffic lacked the required sophistication. Therefore, the Hunterdon County Planning Department provided their travel demand model to the project team for use in the study. The Hunterdon County model was based on the TRANPLAN North Jersey Regional Travel Model (NJRTM) and converted to Cube Voyager software.

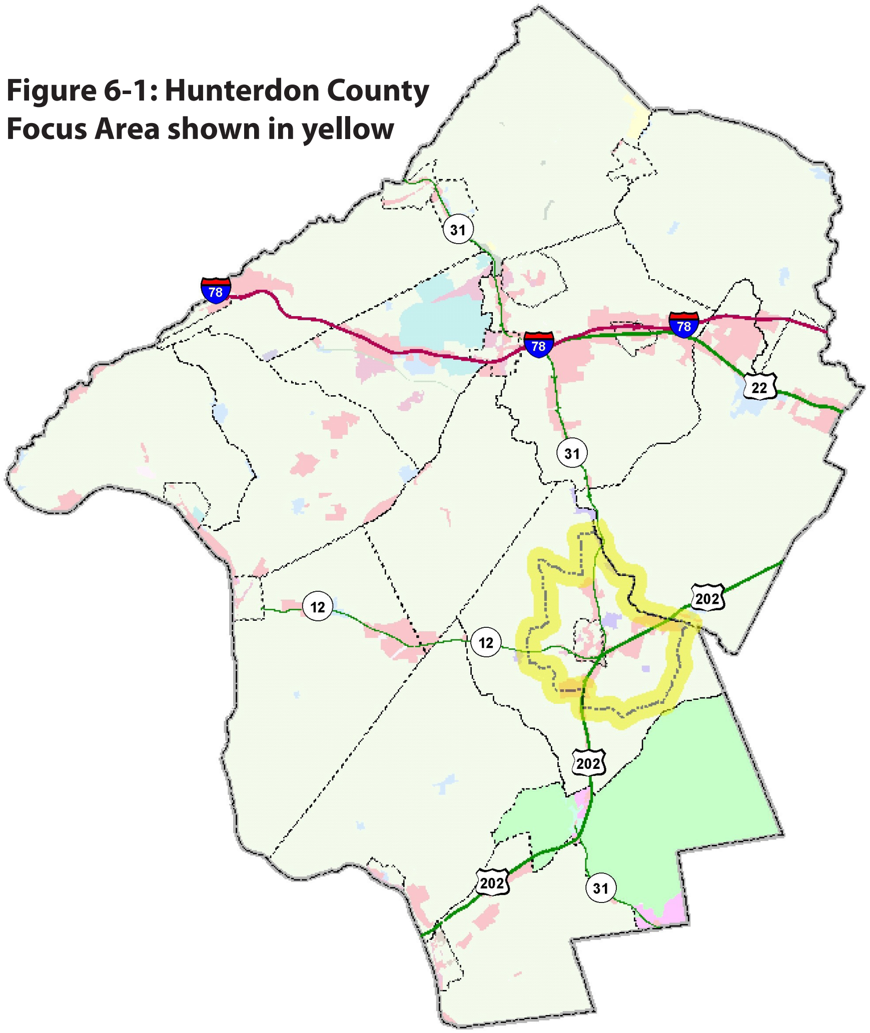


Figure 6-1: Hunterdon County Focus Area shown in yellow

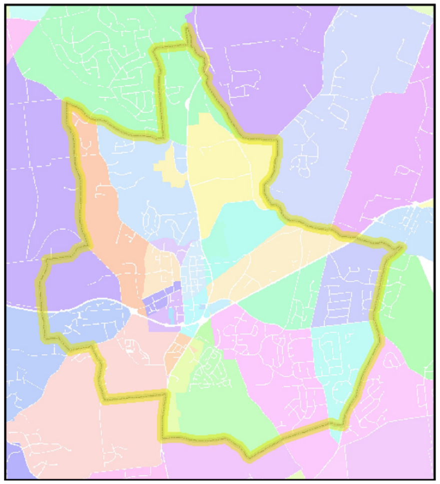


Figure 6-2: Original TAZ's

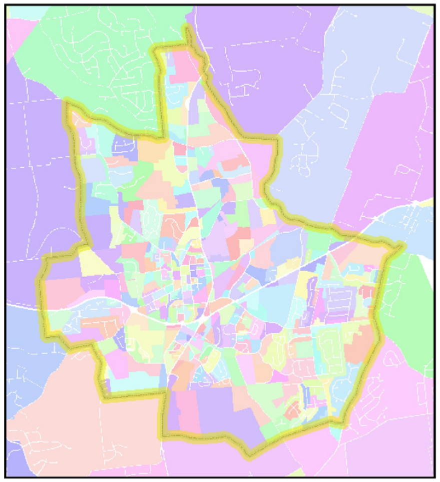


Figure 6-3: Subdivided TAZ's

The Hunterdon County travel model was customized for this study by subdividing traffic analysis zones (TAZs) into smaller zones and coding a more sophisticated representation of the roadway network and traffic intersection operations **(Figures 6-2 and 6-3)**. The addition of detail was completed for only a small area of the County, designated as the "Focus Area," which included all of Flemington Borough and areas of Raritan Township. The boundaries of the Focus Area were strategically chosen by the local planning agency personnel to include those parcels of land and roadways that would be most influenced by the Framework Plan.

The Hunterdon County model was extensively calibrated and validated prior to being used in the NJ Route 31 Study. Once the base year model had been developed, a future year (2025) model was produced using the traffic growth assumptions from the original Hunterdon County model and a "test case" future year roadway network that included the conceptual Framework Plan.

The base year model development and the future "test case" scenario were presented to the project's Transportation Modeling Sub-Committee in 2005. While the committee was largely comfortable with the results of the base year model, the growth assumptions used in the future year model were questioned as being too high and therefore, additional traffic and land development data were collected from the following agencies:

- North Jersey Transportation Planning Authority
- Delaware River Joint Toll Bridge Commission
- Delaware Valley Regional Planning Commission
- Lehigh Valley Planning Commission
- Hunterdon County Planning Board

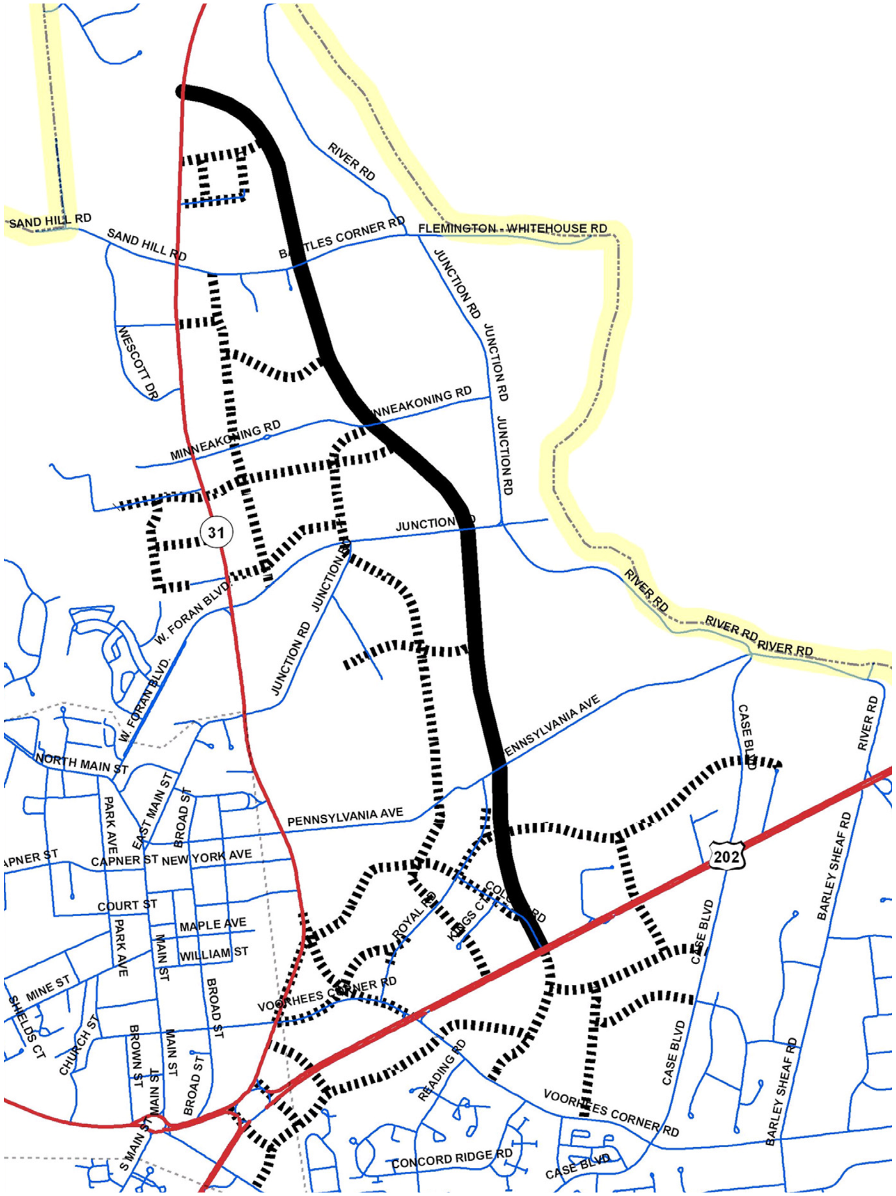
According to the detailed land development records maintained by Hunterdon County, the model's accounting of proposed land development (i.e., planned, preliminary, and approved development) was updated to reflect site plans received through January 2005. Then, based on the growth trends observed in the collected data, it was determined that the traffic and demographic growth assumed in the original Hunterdon County models was fairly high, when compared with the forecasts of future growth most recently approved by NJTPA.

Therefore the following concise set of traffic growth "scenarios" were created to represent the range of traffic and demographic growth that is likely to occur in Hunterdon County:

- *Trend Growth* (high estimate) – Higher land development estimates from NJTPA and highest external traffic growth assumptions.
- *Nominal Growth* (low estimate) – Lower land development estimates from NJTPA and zero external traffic growth.
- *Consensus Growth* (mid-range estimate) – Lower land development estimates from NJTPA and mid-range external traffic growth assumptions, based on a "consensus" of the data collected from the planning agencies.

The three traffic growth scenarios were presented to the Transportation Sub-Committee in 2005, and it was agreed to use the Consensus Growth scenario in evaluating future roadway networking ideas **(i.e., the Framework Plan, Figure 6-4)** for efficient traffic operations.

Figure 6-4: Framework Plan


SAND HILL RD
SAND HILL RD
RIVER RD
BA TLES CORNER RD
FLEMINGTON - WHITEHOUSE RD
JUNCTION RD
JUNCTION RD
JUNCTION RD
WESCOTT DR
MINNEAKONING RD
NNEAKONING RD
31
JUNCTION
JUNCTION RD
JUNCTION RD
W. FORAN BLVD
W. FORAN BLVD
RIVER RD
RIVER RD
RIVER RD
ENNSYLVANIA AVE
CASE BLVD
RIVER RD
NORTH MAIN ST
PARK AVE
EAST MAIN ST
BROAD ST
PENNSYLVANIA AVE
APNER ST
CAPNER ST
NEW YORK AVE
COURT ST
202
BARLEY SHEAF RD
PARK AVE
MAPLE AVE
WILLIAM ST
MAIN ST
ROYAL RD
KINGS CT
COL RD
CASE BLVD
MINE ST
SHIELDS CT
CHURCH ST
VOORHEES CORNER RD
BROAD ST
BROWN ST
MAIN ST
MAIN ST
BROAD ST
READING RD
CASE BLVD
BARLEY SHEAF RD
VOORHEES CORNER RD
S MAIN ST
CONCORD RIDGE RD
CASE BLVD

6.2 Traffic Analysis - May 2005 Design Workshop

The aforementioned traffic modeling methodology with the Consensus Growth Scenario was used during the Design Workshop in May 2005 to test designs for NJ Route 31, The Framework Plan **(Figure 6-4)**, the South Branch Parkway, U.S. Route 202, and the conceptual Flemington "Square."

During the Design Workshop, scenarios developed were immediately examined for feasibility using on site traffic models. As an example, the possibility of using a roundabout intersection design at the northern terminus of the South Branch Parkway was examined in comparison to a more traditional intersection configuration. The preliminary results indicated that better operations would be expected using a signalized intersection.

Based on results observed during the Design Workshop, the following conclusions were made regarding traffic operations using the preliminary traffic volumes determined from the Consensus Growth Scenario:

- The Framework Plan concept was feasible from a transportation operations perspective. Most roadway segments and intersections could be designed and operated to achieve acceptable levels of service, given the traffic forecasted by the traffic model using the Consensus Scenario.
- US Route 202 would likely require a 7-lane cross-section from South Branch Parkway to Reaville Avenue.
- NJ Route 31 would likely require a 5-lane cross-section if the South Branch Parkway was designed with a 2 or 3-lane cross-section. NJ Route 31 might work as a 3-lane cross-section if the South Branch Parkway was designed with a 5-lane cross-section.
- Route chosen by regional travelers. The "signed" routes (i.e., NJ 31, US 202, NJ 12, etc.) would likely carry much of the regional traffic volume in addition to some of the local volume.
- The interconnections provided by other, secondary Framework roadways have recognizable traffic operations benefits, especially when considering intersection turning movement operations.

Origin-Destination and Travel Pattern Studies

One of the major transportation design issues confronted by the NJ Route 31 ILUTP is the inter-mixing of regional and local traffic on roadways in the study area. Two complementary studies—a 1999 origin-destination (O/D) study and a 2004 traffic pattern study—were conducted by to approximate the proportion of regional and local trips and assess significant traffic patterns in the study area. Taken together, the studies generated the following conclusions:

- High volumes of regional and local traffic are intermixed on the study area roadways, especially on NJ Route 31 and U.S. 202. When one roadway must serve both sets of needs, congestion is likely and both sets of needs cannot be well-met. An alternative route parallel to NJ Route 31 is a critical element to the safe and efficient operation of the overall network.
- It is unclear whether regional or local traffic predominates the peak hour traffic stream. The 1999 origin-destination study concluded that approximately 56 percent of the NJ Route 31 traffic stream had origins and destinations that were regional in nature making the Bypass an expedient alternative to the existing NJ Route 31 route.

The 2004 travel pattern study concluded that slightly more traffic (>50%) was associated with local trips than with regional trips. Therefore, future roadway network designs must address the needs of both types of traffic.

Traffic Analysis Summary
Following the May 2005 Design Workshop, several model updates and enhancements were added to simulate route signage, provide initial intersection delay assumptions, and update the model roadway network, given the input and feedback provided by the Modeling Subcommittee and the Local Planning Committee (LPC).

As the Framework Plan concept moved from feasibility-assessment towards adoption as a part of Raritan Township's Master Plan, local officials and municipal staff requested that additional analyses be conducted to evaluate the transportation benefits and drawbacks of the individual elements of the Framework Plan. These scenarios and roadway modifications are detailed in the following section.

Traffic Simulation: Following the CUBE Voyager traffic forecasting, Synchro/SimTraffic analysis software was used to conduct PM peak hour traffic operations analyses for the year 2025. This model allows for more detailed simulation analyses of the different scenarios. The results provided by the analyses include average delay per vehicle at each intersection, and the corresponding levels of service (See **Appendix B** for explanation of levels of service). The following scenarios were analyzed:

Scenarios

1. No-Build - This network is essentially the same as the existing network. However it also includes any roadways or intersections currently planned or under construction e.g. US 202 and Case Boulevard.
2. Framework Plan A – This network consists of the latest Framework Plan, last revised at the November 2, 2005 LPC meeting. The framework includes the proposed South Branch Parkway with 1 travel lane in each direction, an existing NJ Route 31 and 6 travel lanes on US 202 between the South Branch Parkway and Reaville Avenue.
3. Framework Plan B – This network consists of the latest Framework Plan and includes the proposed South Branch Parkway with 1 travel lane in each direction, 5 lanes on NJ Route 31 (2 each direction with a center turn lane) and 6 travel lanes on US 202 between the South Branch Parkway and Reaville Avenue.
4. Framework Plan C – This network consists of the Framework Plan shown in Figure 3-4 and includes the proposed South Branch Parkway with 2 travel lanes in each direction, an existing NJ Route 31 and 6 travel lanes on US 202 between the South Branch Parkway and Reaville Avenue.

In addition to these larger networks, some individual intersections were also examined for variations in traffic control methods, such as jug-handles and roundabouts.

Simulation Analysis Results: The Synchro/SimTraffic 2025 PM peak hour analysis results for the four main scenarios are tabulated below on a corridor-by-corridor basis **(Table 6-1)**. The results shown are the intersection level of service and, in cases of LOS E and LOS F, the average overall delay (seconds per vehicle). These results are useful for understanding how traffic conditions could deteriorate if no roadway improvements are made (No-Build) and for comparing the different Framework Plan scenarios to the No-Build and to one another. Detailed results of the simulation analysis can be found in **Appendix C**.

The simulation results of the No-Build scenario indicate that there would be widespread queuing along the NJ Route 31 corridor and throughout the study area. All the signalized intersections along NJ Route 31 would operate at failing levels of service with demand volumes exceeding capacity. The simulations indicate major delays and lengthy queues leading to many instances of queues long enough to block movements at upstream intersections, forming gridlock type conditions at times.

The simulation results of the three Build scenarios that include the Framework Plan indicate that operations would improve significantly over the No-Build conditions **(Table 6-1)**. As indicated by the analysis results, traffic conditions under all three of the Build scenarios would be similar with only one or two intersections operating at LOS E or LOS F. The results for Framework Plan A are somewhat surprising considering that the working assumption was that either a continuous five (5) lane NJ Route 31 or a four (4) lane parkway would be a necessary component of any alternative to achieve non-failing LOS results throughout the network.

Table 6-1: 2025 PM Peak Hour Analysis Results

a. Results for US 202 Corridor

Intersecting Street	No Build	Framework A	B	C
Square West	-	B	B	B
Mall Blvd	-	C	C	C
NJ 31 (Voorhees Cnr Rd)	F (240)	E (69)	F (81)	E (64)
Reading Rd	-	C	D	D
South Branch Parkway	-	D	D	E (61)
Case Blvd	C	B	C	C

b. Results for NJ 31 Corridor

Intersecting Street	No Build	Framework A	B	C
Route 12/Royal Rd	-	B	B	B
Church St	F (220)	-	-	-
New Church St Extension	-	B	B	B
New Jersey Ave	F (100)	B	A	B
Junction Rd/East Main Street	F (80)	B	B	A
Walter Foran Extension	F (101)	C	C	C
Minneakoning Rd	E (69)	B	B	B
Wescott Dr	F (163)	B	B	B
Bartles Corner Rd	F (295)	C	C	C
Prestige Plaza	C	A	A	A

c. Results for South Branch Parkway Corridor

Intersecting Street	No Build	Framework A	B	C
Voorhees Cnr Rd (E of US 202)	-	B	B	B
Royal Rd	-	B	A	A
Walter Foran Extension	-	B	B	C
Minneakoning Rd	-	A	A	A
Creek Dr	-	B	A	A
SBP & Bartles Corner Rd	-	D	C	C
SBP & NJ 31	-	C	C	B

(shaded cells are RODEL results)

A complementary piece of traffic information that provides more insight into the results of the simulation analysis is a comparison of the traffic volumes entering and traveling through the corridor. This is useful to determine if the traffic scenarios that are being compared are processing similar amounts of volume or if one is processing significantly more or less traffic than in the other scenarios. **Table 6-2** shows the existing and projected traffic volumes at key locations throughout the network for each of the scenarios.

The results of the simulation analysis generally correlate well with the volumes of traffic processed. For the Framework A alternative, the volumes of traffic using NJ 31 would be a slightly lower than the volumes currently processed under existing conditions and therefore slightly improved traffic operations would be expected. The total traffic entering the network would generally split between NJ 31 and the South Branch Parkway.

Table 6-2: 2025 PM Peak Hour Traffic Volumes by Link

a. NJ 31

Intersecting Street	Existing	No Build	Framework A	B	C
North of South Branch Parkway	-	2900	2900	3000	2950
North of Bartles Corner Road	1850	2850	1700	2150	1500
North of Church Road	2000	2800	1850	1950	1650

b. US 202

Intersecting Street	Existing	No Build	Framework A	B	C
South of South Main Street	3400	4650	4650	4700	4650
North of Circle	3000	3850	4900	4950	5250
North of Case Boulevard	3550	4700	4350	4400	4500

c. South Branch Parkway

Intersecting Street	Existing	No Build	Framework A	B	C
South of NJ 31	-	-	1200	900	1450
North of US 202	-	-	1650	1550	1900

For the Framework B alternative, additional capacity is provided on NJ 31 in the form of a continuous 5-lane cross section. The simulation results for the scenario indicate that additional traffic is drawn to the NJ 31 corridor (approximately 15-20% higher than existing conditions), with slightly less using the parkway when compared to the Framework A alternative. Both corridors have sufficient capacity to carry the estimated traffic volumes, with additional capacity available if/when it is needed.

In the Framework C alternative, the South Branch Parkway is modeled as a 4-lane roadway, with an existing cross section on NJ 31. The simulation results indicate that for this scenario there is an anticipated drop of about 20% compared to existing volumes expected to use NJ 31 as more traffic shifts to the greater capacity provided by the South Branch Parkway.

The LOS and volume comparisons provide useful information about how the different framework plans are projected to operate and where traffic will go when compared to no-build, but do not provide much insight into the differences between the framework plans. Another piece of the simulation modeling results that does provide some insight into the operational differences is the volume to capacity ratio (v/c). Much like it sounds, this is a measurement of how full a roadway or intersection is operating. As a rule of thumb, a v/c ratio below 0.75 suggests that an intersection or roadway is operating well and has available capacity to accommodate growth. A v/c ratio approaching 1.0 (Approaching Capacity) suggests that a roadway is operating poorly with little capacity available for growth. A v/c ratio over 1.0 (Beyond Capacity) suggests that a roadway is operating at failing conditions with no available capacity for growth.

Table 6-3 shows the HCM (Highway Capacity Manual) v/c ratio for two intersections on NJ 31 and the South Branch Parkway for the different framework alternatives. These results indicate that along the South Branch Parkway, all three alternatives operate under capacity however, Framework C clearly has the most available capacity for growth. Along the NJ 31 corridor, all three alternatives operate well below capacity, with Framework B providing the most room for additional growth as the 3-lane "pinch-points" have been removed.

Table 6-3: 2025 PM Peak Hour HCM Intersection v/c Ratios

a. South Branch Parkway

Intersecting Street	Framework		
	A	B	C
Walter Foran	0.88	0.85	0.66
Royal Road	0.77	0.72	0.41
Average	**0.83**	**0.79**	**0.54**

b. Route 31

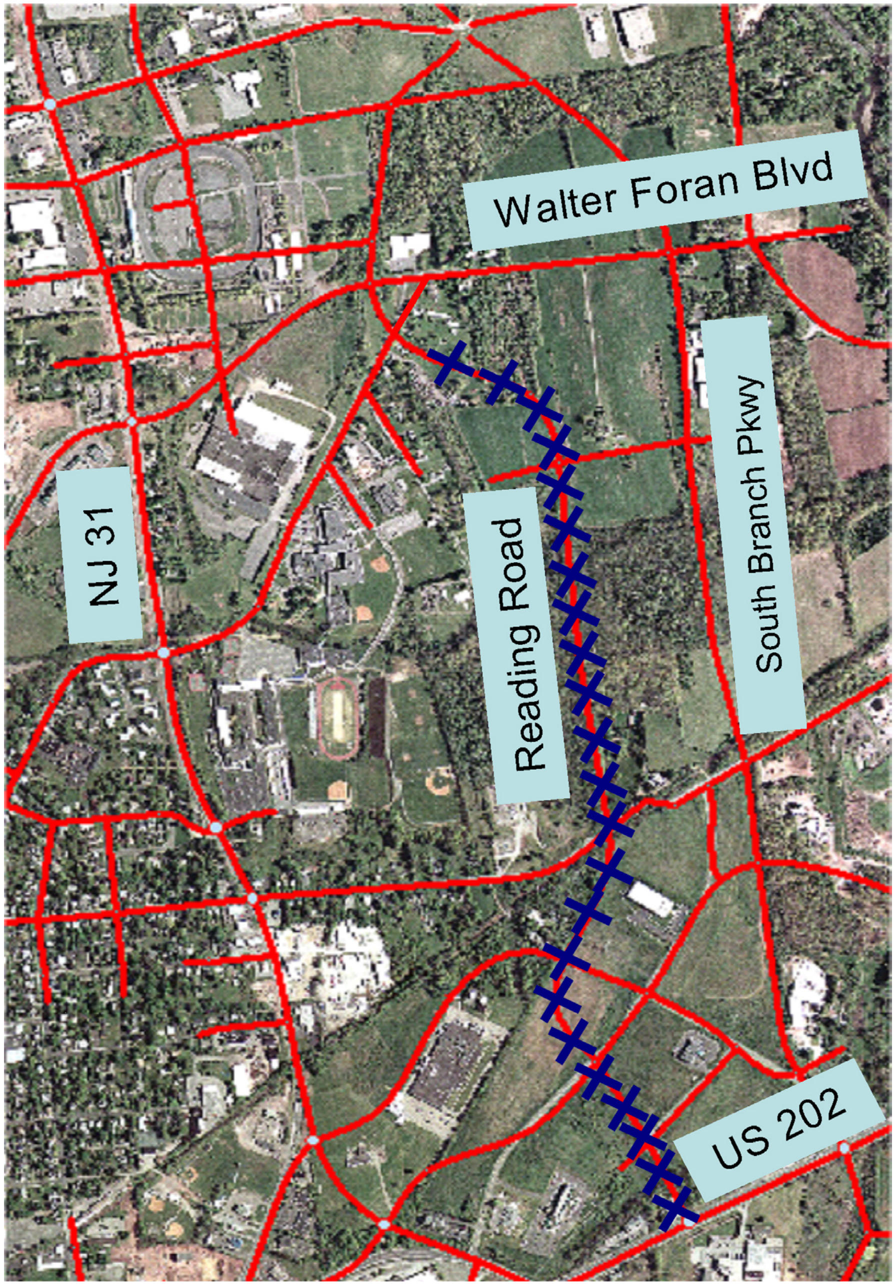
Intersecting Street	Framework		
	A	B	C
Minneakong Road	0.67	0.58	0.71
Wescott Drive	0.62	0.55	0.56
Average	**0.65**	**0.57**	**0.64**

Network Variations: In addition to the above scenarios, the following three network variations were also examined.

1. Framework Plan A without Reading Road. This network consists of the Framework Plan A, described above, but with Reading Road removed between Junction Road and U.S. 202. Reading Road is a 2-lane roadway running north-south parallel to NJ 31 and the South Branch Parkway.
2. Framework Plan B without Road A. This network consists of the Framework Plan B, described above, but with Road A removed from between Flemington Square and the South Branch Parkway. Road A is a 2-lane roadway running east-west south of US 202.
3. No Framework Roadways. This network consists of the no-build scenario with the addition of a 4-lane South Branch Parkway and 4 lanes on US 202.

The intent of examining the three network variations was to determine what impact, if any, the variations would have on the NJ Route 31, US 202 and South Branch Parkway corridors. In this manner, it could be determined what might happen if either part or all of the Framework Plan was not constructed.

Figure 6-5: Network Variation 1



Network Variation 1 (Framework Plan A without Reading Road, see **Figure 6-5**): When compared to Framework Plan A, as shown in **Table 6-6**, Network Variation 1 would result in greater delays along the US 202 and South Branch Parkway corridors, with one intersection degrading from LOS E to LOS F and another from LOS D to LOS E. Level of service for all intersections along the NJ Route 31 corridor remains unchanged.

Table 6-4: 2025 PM Peak Hour Analysis
Network Variation 1

a. Results for US 202 Corridor

Intersecting Street	Framework Plan A	Plan A w/o Reading Rd
Square West	B	B
Mall Blvd	C	C
Voorhees Corner/NJ 31	E (69)	F (125)
South Branch Parkway	D	E (56)
Case Blvd	B	C

b. Results for SBP Corridor

Intersecting Street	Framework Plan A	Plan A w/o Reading Rd
Voorhees Cnr Rd (E of US 202)	B	B
US 202	D	E (56)
Royal Rd	B	C
Walter Foran Extension	B	C
Minneakoning Rd	A	A
Creek Dr (new roadway)	B	A
Bartles Corner Rd	D	D
NJ 31	C	C

(shaded cells are RODEL results)

Network Variation 2 (Framework Plan B without Road A, see **Figure 6-6**): When compared to Framework Plan B, as shown in **Table 6-5**, this network variation would result in greater delays at a number of intersections, particularly along US 202. Without Road A in the network, one intersection remains at LOS F (albeit with more delay), and two others would degrade from LOS D to LOS E.

Figure 6-6: Network Variation 2

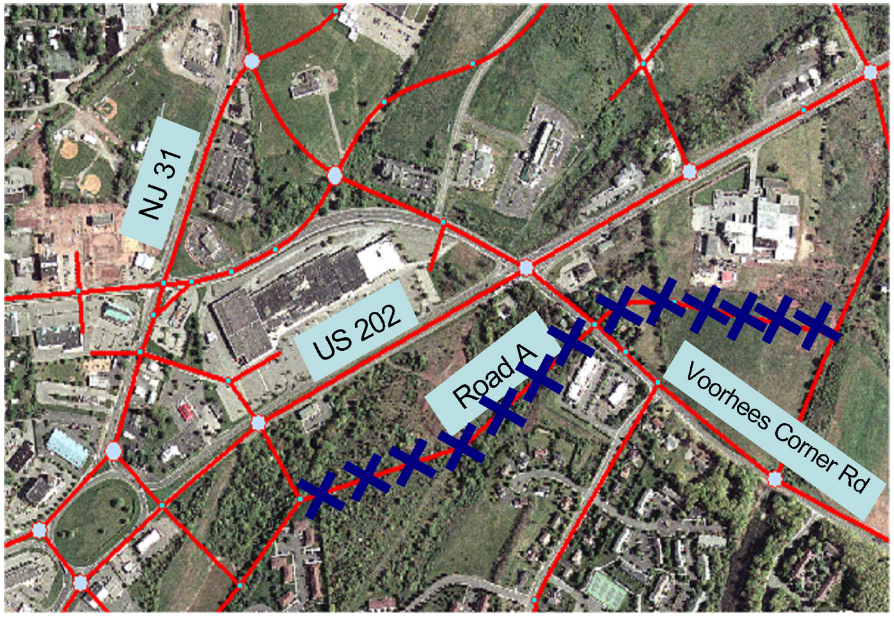


Table 6-5: 2025 PM Peak Hour Analysis along US 202 Network Variation 2

Intersecting Street	Framework Plan B	Plan B w/o Road A
Square West	B	B
Mall Blvd	C	C
Voorhees Corner/NJ 31	F (81)	F (94)
Reading Road	D	E (68)
South Branch Parkway	D	E (74)
Case Blvd	C	D

Network Variation 3 (No Framework Roadways): This network variation would result in improved traffic operations when compared to the No-Build, although the conditions are generally worse along US 202 than any scenarios that include the Framework Plan. This is likely a result of a 4 lane cross section, as opposed to the 6 lane cross section for the Framework Alternatives. Levels of service along the other study area corridors would be expected to continue operating at LOS D or better. Although this scenario would serve drivers better than the No-Build, it would not be as adequate from a traffic operations standpoint as any of the other Build alternatives because many drivers would continue to find lengthy delays or queues throughout the study area. This is due primarily to the fact that they would be forced to use one or two roadways as opposed to the multiple roadways provided in the Framework Alternatives. A comparison of analysis results under Network Variation 3 and Framework Plan C is presented in **Table 6-6**.

Table 6-6: 2025 PM Peak Hour Analysis Network Variation 3

a. Results for SBP Corridor

Intersecting Street	Framework Plan C	No Framework
Voorhees Cnr Rd (E of US 202)	B	B
US 202	E (61)	F (102)
Royal Rd	A	A
Walter Foran Extension	C	D
Minneakoning Rd	A	A
Creek Dr (new roadway)	A	N/A
Bartles Corner Rd	C	C
NJ 31	B	D

(shaded cells are RODEL results)

b. Results for 202 Corridor

Intersecting Street	Framework Plan C	No Framework
Square West	B	N/A
Mall Blvd	C	N/A
Voorhees Corner/NJ 31	E (64)	F (80)
Reading Road	D	N/A
South Branch Parkway	E (61)	F (102)
Case Blvd	C	F (87)

Roundabout Analysis:
Roundabout analyses were performed at four locations along the South Branch Parkway to compare traffic operations of a roundabout to signalized control. As requested by NJDOT the software package RODEL was used to perform roundabout analyses for both one-lane and two-lane roundabout options at the following four intersections:

- South Branch Parkway & Royal Road
- South Branch Parkway & Walter Foran Extension
- South Branch Parkway & Minneakoning Road
- South Branch Parkway & Creek Drive

For the 2-lane parkway scenario (Framework Plan A), these roundabouts would have one lane of circulating traffic. In the 4-lane parkway scenario (Framework Plan C), the roundabouts would have two lanes of circulating traffic. For comparison purposes, these intersections were also designed to operate with a traffic signal and analyzed using the software package Synchro/SimTraffic. Intersection analysis results for the both the roundabouts and traffic signals are summarized in **Table 6-7**.

Table 6-7: 2025 PM Peak Hour Analysis Results along SBP Roundabouts compared to Traffic Signals

a. Framework A

Intersecting Street	Roundabout	Traffic Signal
Royal Rd	B (11)	B (20)
Walter Foran Ext.	B (11)	D (44)
Minneakoning Rd	A (8)	D (44)
Creek Dr	B (10)	B (18)

b. Framework C

Intersecting Street	Roundabout	Traffic Signal
Royal Rd	A (2)	A (6)
Walter Foran Ext.	C (16)	C (22)
Minneakoning Rd	A (3)	B (14)
Creek Dr	A (3)	A (4)

Analyzed Using RODEL	Analyzed Using SimTraffic

For both Framework Plan A and Framework Plan C, the analysis results for each intersection indicate that a roundabout design provides a feasible alternative to a traditional signalized intersection.

6.3 Traffic Analysis Conclusions

A comparison of the traffic simulation analysis results and the anticipated traffic volumes for all of the scenarios modeled did not present many large differences between the alternatives, thereby necessitating a comparison of other measures of effectiveness and qualitative benefits.

The less invasive and least costly Framework A alternative provides additional capacity to the network, in the form of a 2-lane South Branch Parkway, and it would process traffic volumes similar to existing Route 31 levels on both the Parkway and Route 31. The intersection levels of service results from the simulation analysis are generally considered acceptable; however, the v/c ratio of 0.83 along the South Branch Parkway indicates the roadway would be starting to approach capacity by the design year, although there is still limited room for growth.

The Framework B alternative is the only alternative that creates a standardized cross section along NJ 31 (i.e., removes the bottleneck points). Simulation results show intersection levels of service within acceptable ranges, and v/c ratios along NJ 31 that indicate additional available capacity. While the v/c ratios along the South Branch Parkway are starting to approach capacity, there is still some room for additional growth.

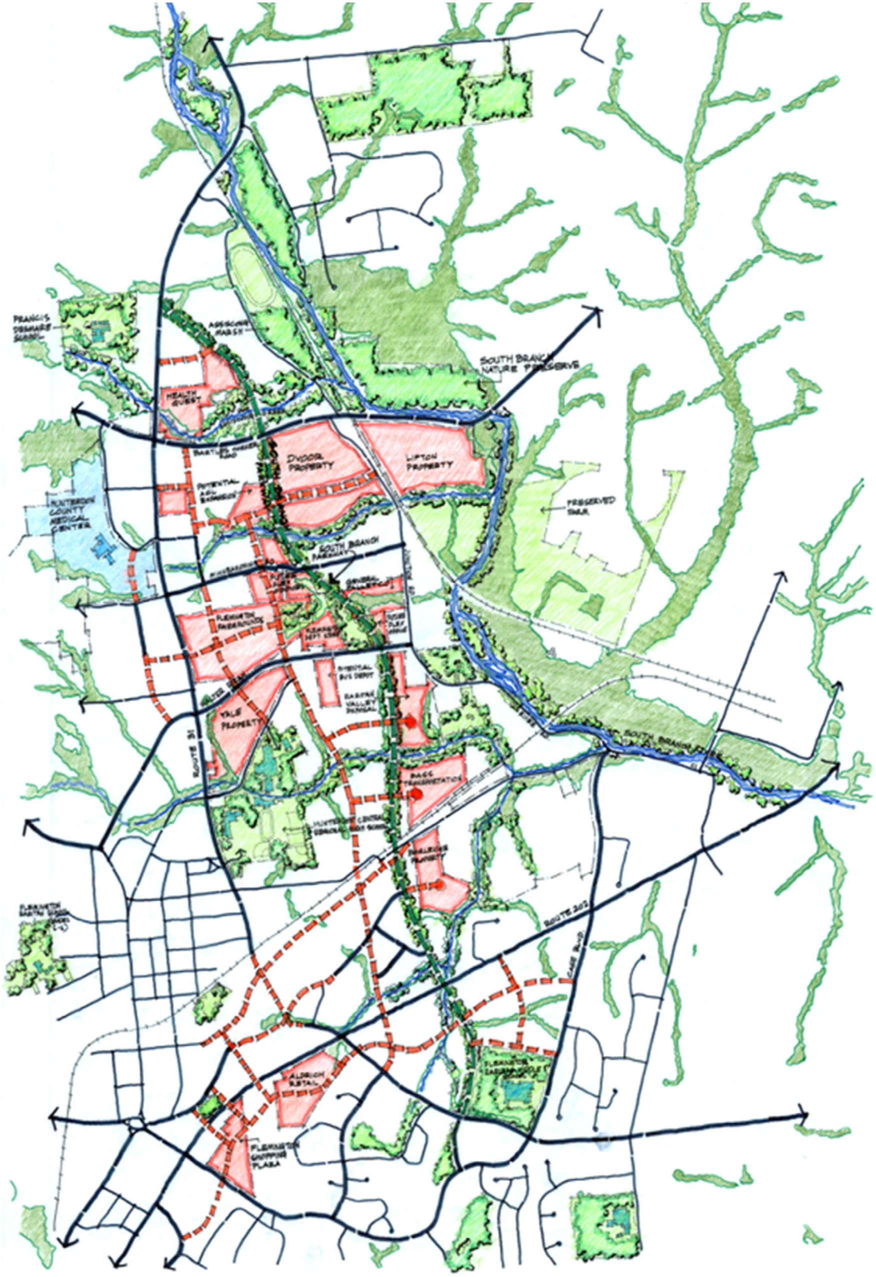
Framework C provides four new lanes of travel along the proposed South Branch Parkway, thereby providing the most additional capacity for traffic traveling through the area. The simulation levels of service and v/c ratios indicate opportunity for additional traffic growth beyond the design year.

A number of network variations were analyzed to determine the flexibility in the design of each framework plan. The analysis results showed that although individual links could be removed from the framework without a fatal impact, this would lead to an overall degradation in traffic operations throughout the system. The removal of the entire framework plan, as in Network Variation 3, would lead to failing levels of service and queuing issues along US 202.

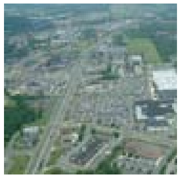
A comparison of traffic operations under a roundabout vs. a traditional signalized intersection was conducted at four candidate locations along the South Branch Parkway, and the analysis results indicate that a roundabout design provides a feasible alternative to a traffic signal design.

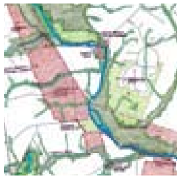
Overall, the analysis results showed that the three (3) scenarios provide comparable levels of service with Framework B and Framework C having a "factor of safety" when compared to Framework A since both alternatives have additional capacity should the actual amount or location of land developments and associated traffic volumes and patterns be greater or different than anticipated. This additional roadway capacity provides a benefit in that the roadway network is better suited to handle incidents than Framework A. However, the additional capacity must be weighed against the additional cost associated with those alternatives. Lastly, when comparing Framework B to the other Framework Plans, Framework B should have the best impact to safety conditions along existing Route 31 since it addresses the mix of cross sections.

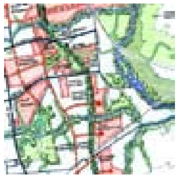
Figure 6-7: Conceptual Framework Plan



FRANCIS DEMARE SCHOOL
ASSISCONK MARSH
SOUTH BRANCH NATURE PRESERVE
HEALTH QUEST
DVOOR PROPERTY
LIPTON PROPERTY
POTENTIAL AG. EXPANSION
HUNTERDON COUNTY MEDICAL CENTER
PRESERVED FARM
SOUTH BRANCH PARKWAY
FLEMINGTON FAIRGROUNDS
POTENTIAL BUS DEPOT
RARITAN VALLEY DENTAL
YALE PROPERTY
ROUTE 31
BASS TRANSPORTATION
HUNTERDON CENTRAL REGIONAL HIGH SCHOOL
ROUTE 202
CASE BLVD
ALDRICH RETAIL
FLEMINGTON SHOPPING PLAZA







Section 7

Implementation Initiatives

7.1 Breakout Projects

As the ILUTP and Smart Growth studies progressed, several breakout projects were identified by the NJDOT in coordination with local officials. These projects described below, consist mostly of intersection improvements that are currently in different phases of study.

NJ 31 and East Main Street:

Following the completion of the NJ 31 roadway improvements in 2004 (known as the 6D project) it became apparent that local municipalities felt that there were operational and potential safety problems at the intersection on NJ 31 and East Main Street primarily due to the bottleneck on southbound Route 31 **(Figure 7-1)**.

Requests to NJDOT from Flemington Borough and Raritan Township led to the completion of a traffic operations study at the intersection.

The study found that traffic coming through the intersection with Walter Foran Boulevard traveling south in the right lane, which ended as a right turn only lane at the intersection, was delayed while waiting for a gap to merge with the left lane traffic before the intersection **(Figure 7-1)**. This condition was considered to be a potential safety concern. In addition it was found that the congested intersection operations at NJ 31 and Walter Foran Boulevard (the next intersection to the north) could be partially mitigate by allowing traffic to turn left from East Main Street to NJ 31 northbound. A redesign of the intersection was completed in 2005, and intersection improvements were completed in 2006 **(Figure 7-2)**.

Figure 7-1: Intersection Configuration of NJ 31 and East Main Street Prior to Improvements

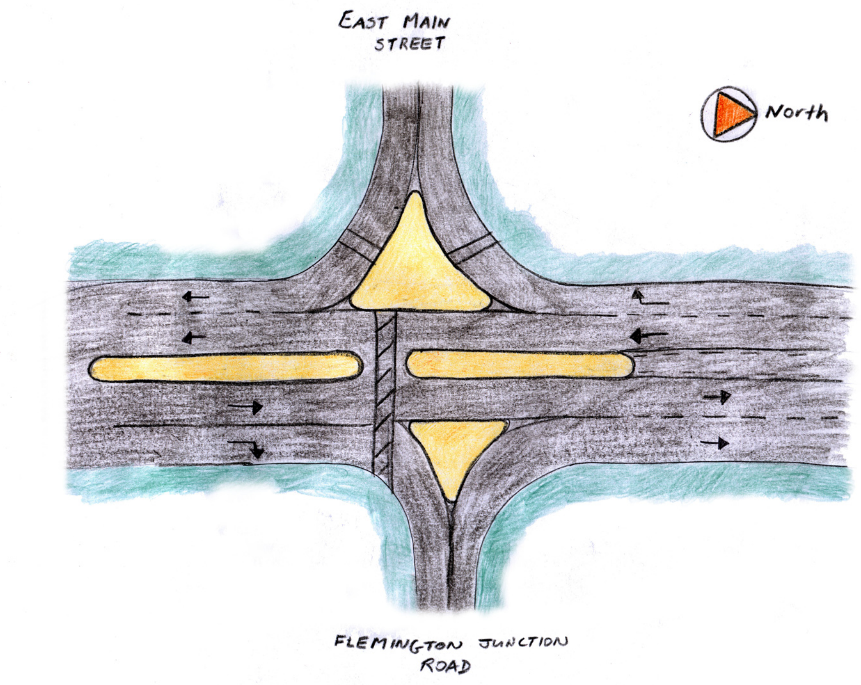
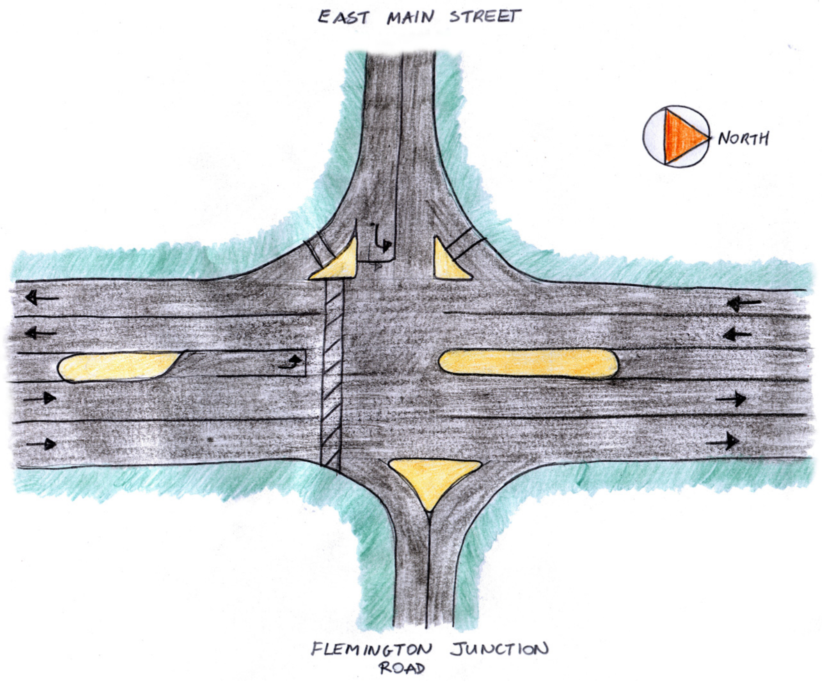


Figure 7-2: Intersection Configuration of NJ 31 and East Main Street After Improvements



Main Street Circle:
The Main Street Circle is located at the intersection of NJ 12, Main Street and Reaville Avenue in Flemington Borough, just west of the Flemington Circle. It is a five leg traffic circle, with a "cut-thru" on the eastern leg for entering Reaville Avenue traffic **(Figure 7-3)**.

The problems identified at this location include safety concerns, due to a higher than normal number of crashes over a three year period and traffic operations. The circle was identified by NJDOT as a location eligible for safety funding as it received a safety score of 10 (on a scale of 1 to 10 with 1 being the best and 10 being the worst).

A Tier II study was undertaken to examine the location and traffic operations, and to identify the project pipeline assignment. The study proposed several alternatives to retrofit a modern roundabout in place of the existing traffic circle. A modern roundabout differs from a traffic circle in several ways. They are generally smaller, easier to navigate, with consistent traffic operations. Traffic entering the roundabout yields to traffic circulating the central island. Traffic within the roundabout does not stop.

A preferred alternative was identified **(see Figure 7-4)** and proposed to the NJDOT Capital Programming Committee in the spring of 2007. The project was advanced, and is currently in final design.

Route 12 Circle:
The Route 12 Circle is located in Raritan Township approximately a half mile west of the Main Street Circle, at the intersection of NJ 12 and CR 523 (Sergeantsville Road/Mine Street). Following the identification of the Main Street and Flemington Circles for conversion to modern roundabouts, a re-striping and re-signing project was identified for the Route 12 circle. The intent of this project is to provide consistent traffic operations at the three adjacent intersections by re-striping and re-signing this location to operate as a roundabout.

Figure 7-3: Existing Main Street Circle Configuration

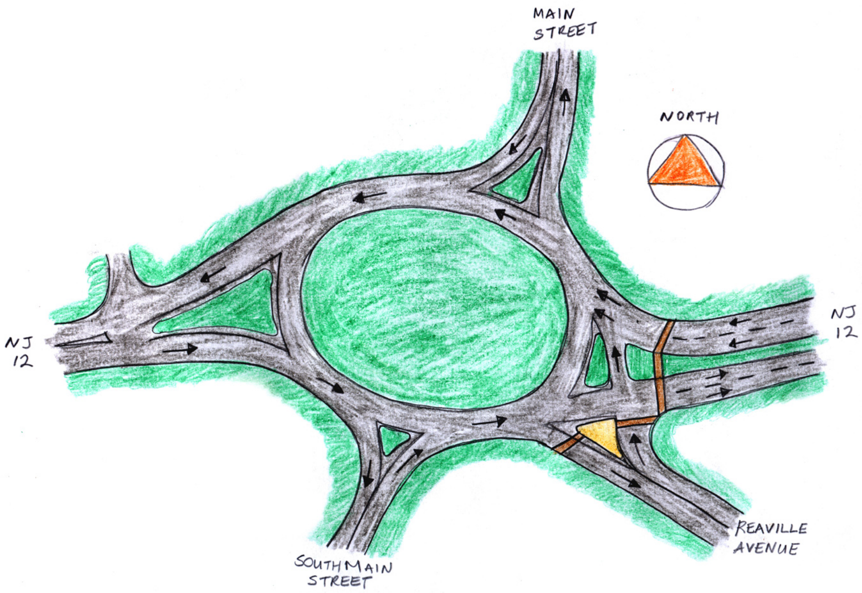
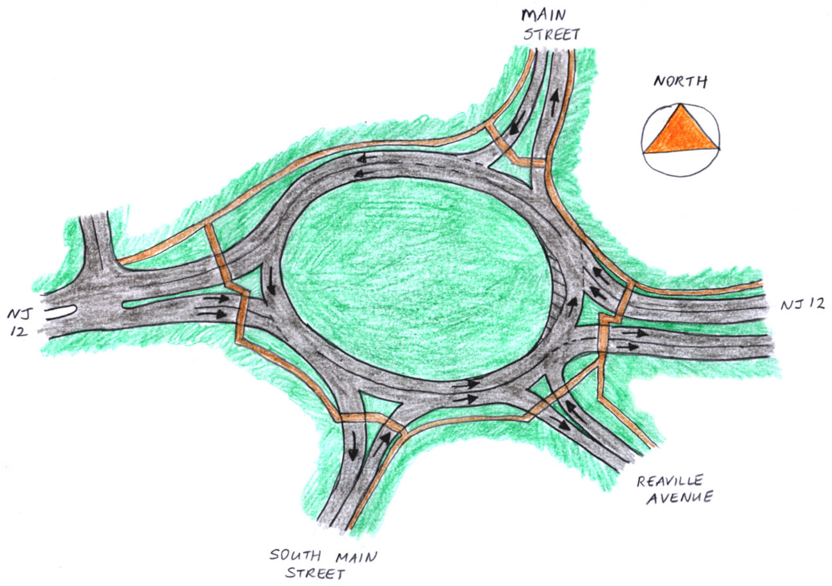


Figure 7-4: Proposed Main Street Roundabout Configuration



US 202 and Voorhees Corner Road/Church Street:
The intersection of US 202 and Voorhees Corner Road/Church Street is located in Raritan Township, just east of the Flemington Circle. It is a signalized intersection processing large volumes of traffic daily.

This location was identified as a breakout project as a result of the excessive queuing and delay on US 202 northbound. Traffic in the left turn lane was backing onto main-line US 202 creating an undesirable and potentially unsafe condition. In order to accommodate the large number of left turns, as well as the u-turns to the adjacent Flemington Mall the intersection was redesigned in 2006 to provide a left/u-turn lane and a second left turn only lane. Construction of the changes was completed in November 2006.

NJ 31 between Pennsylvania Ave and Church Road:
The existing one lane section of NJ 31 for southbound traffic between Pennsylvania Avenue and Church Street is inconsistent with the two lane sections to the north and south. Because of this, the addition of a second southbound lane was identified as a breakout project and is currently under study.

Figure 7-5: Intersection Configuration of US 202 and Voorhees Corner Road/Church Street Prior to Improvements

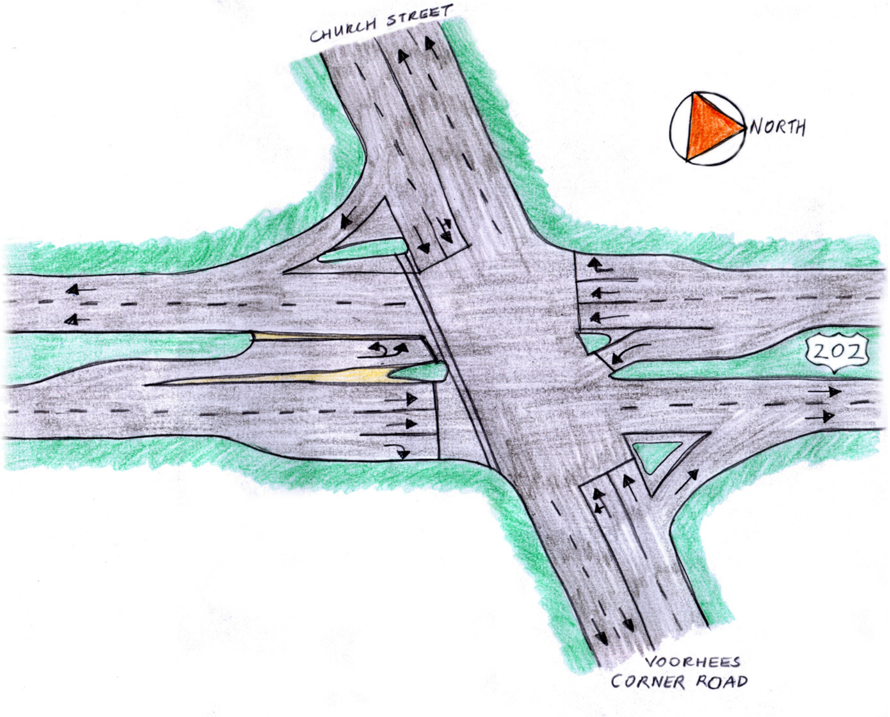
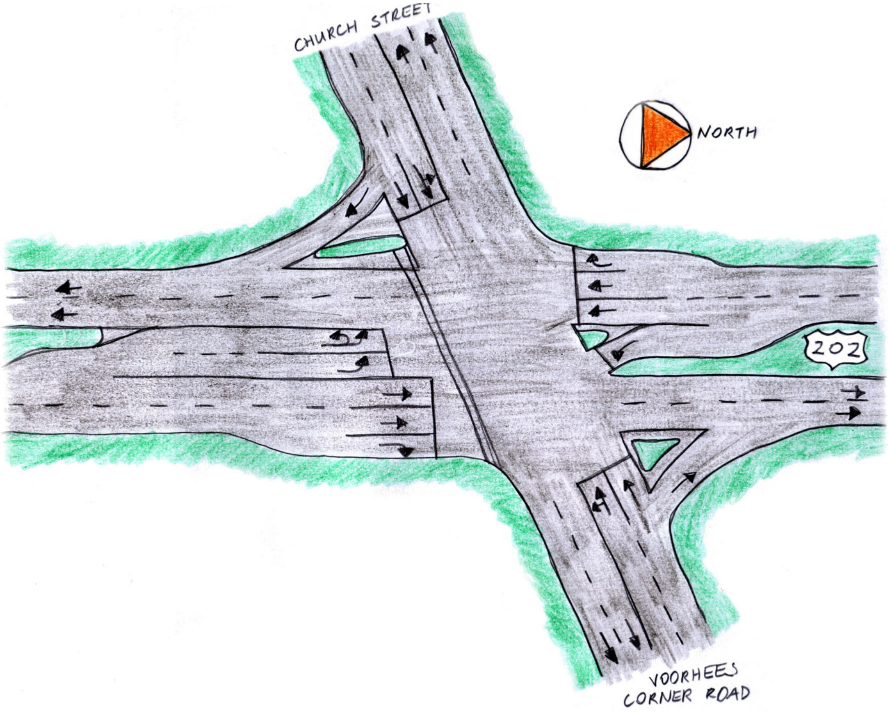


Figure 7-6: Intersection Configuration of US 202 and Voorhees Corner Road/Church Street After Improvements



7.2 NJDOT Initiatives & Ongoing Studies

The following are of a number of additional NJDOT initiatives that are currently under study:

South Branch Parkway Environmental Impact Statement

The purpose of the South Branch Parkway Project is to provide additional capacity for local and regional trips within and through the project area, in the form of a new north/south roadway that will function as an alternative to Route 31. Connections to this new road from areas under development will be allowed (through public roads), to minimize increased demand on the capacity of Route 31.

This project has recently been placed on hold.

Flemington Circle Feasibility Assessment

The Flemington Circle is the largest of the three traffic circles in the environs of Flemington. It is located where US 202, NJ 31 and NJ 12 meet just to the southeast of Flemington's Historic District. Current operations give US 202 traffic right-of-way through the circle in both the northbound and southbound directions. The circle experiences significant congestion during peak periods of the day, and on the weekends due mostly to the abundant nearby shopping areas. As part of the Framework plan developed during the ILUTP, the circle was proposed to be converted to a town square. However, due to current traffic patterns and volumes, the conversion to a square cannot be completed until the opening of the South Branch Parkway. Due to ongoing congestion issues, and safety concerns, a NJDOT feasibility study is currently underway to investigate converting the circle to a non grade-separated intersection as an interim or long-term solution.

Route 31 Church Street thru Barltes Corner Road

The project was initiated as a result of a problem statement completed in early 2007 for the section of NJ Route 31 between Church Street and Pennsylvania Avenue. The problem statement identified the issue as a lack of consistency in the number of travel lanes which generates both safety and congestion problems. This project has been advanced to the Concept Development Phase of the NJDOT Project Delivery Process as a result of the existing problem statement and based on a preliminary assessment conducted on the corridor with the affected communities during the Route 31 Integrated Land Use and Transportation Plan (ILUTP). The efforts of that study were undertaken with the understanding that the development of an Integrated Land Use and Transportation Plan might permit

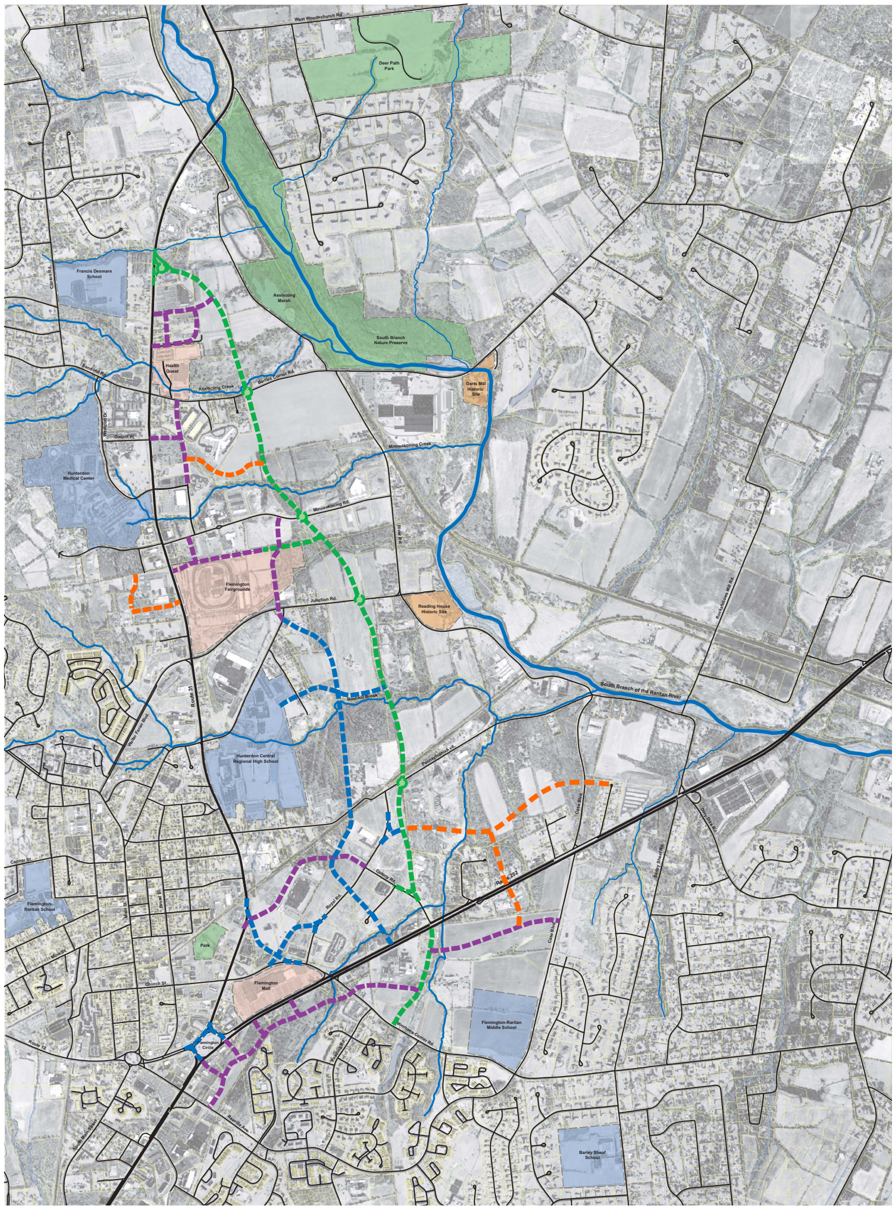
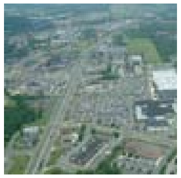

West Woodschurch Rd.
Deer Path Park
Francis Desmare School
Clinton Rd.
Assiscong Marsh
South Branch Nature Preserve
Health Quest
Sand Hill Rd.
Assiscong Creek
Bartles Corner Rd.
Darts Mill Historic Site
Westcott Dr.
Gauntt Pl.
Minneakoning Creek
Hunterdon Medical Center
Minneakoning Rd.
River Rd.
Flemington Fairgrounds
Junction Rd.
Reading House Historic Site
Rockafellows Mill Rd.
South Branch of the Raritan River
Route 31
Bushkill Brook
Walter Foran Blvd.
Hunterdon Central Regional High School
Pennsylvania Ave.
Case Blvd.
Dory Dits Rd.
Capner St.
Colony Rd.
Route 202
Barley Sheaf Rd.
Flemington-Raritan School
Main St.
Broad St.
Royal Rd.
Park
Mine St.
Case Blvd.
Church St.
Flemington Mall
Flemington-Raritan Middle School
Flemington Circle
Route 12
Voorhees Corner Rd.
Reading Rd.
Reaville Ave.
South Main Street
Barley Sheaf School

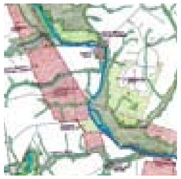
Figure 7-7: Framework Plan (December 2006)

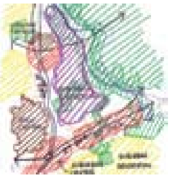
some elements of the plan to be advanced into the process. As such, concepts were developed to address the present and future identified needs, while maintaining consistency with the longer term plan. This project is anticipated to advance from Concept Development to Feasibility Assessment in the Fall of 2008.

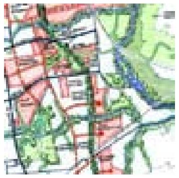
Developer Coordination and Local Circulation Studies

There are a significant number of developable parcels in the Flemington and Raritan study area identified during the ILUTP studies and stakeholder interviews. Developers of these parcels have been included in the process since its commencement and coordination with these developers is ongoing. This coordination is vital to ensure compatibility with the framework plan, as well as reducing the funding required for construction of roadways since the developers build pieces of the framework as development occurs.









Section 8

Lessons Learned

8.1 Lessons Learned

The Route 31 ILUTP project represented a new approach for the NJDOT. The purpose behind a Smart Growth approach was to create projects to target the State's resources and funding in ways that enhance the quality of life for the residents in New Jersey. While this was the primary reason behind a re-evaluation of Route 31 Bypass alternatives, the forecasted costs of the project (>$150M) added an incentive to investigate solutions which might be cost effective and consistent with Smart Growth Principles.

Since this was a new type of study, a procedure or process for completing the study was not available. During the course of the study, several "lessons learned" became evident that may be beneficial to future studies of similar nature. These lessons are outlined below:

1. Identify Key Participants, Roles and Commitments

The approach we used to develop a framework plan was a very inclusive process that was new to the local municipalities and the public as well as the State. This inclusive process played a key part in the successes of the project. Partially as a result of a new approach, however, there were initial undefined expectations and responsibilities that created some confusion and uncertainty. Initial meetings should be used to help define what are the State's expectations of the community (e.g., adoption of a roadway plan as a circulation element, involvement from the planning board on proposed land use changes, etc) as well what the State is committing to delivering and their involvement in assisting the communities in making proposed changes. Ultimately, local municipalities and the community will determine the success of a plan.

- Include local municipalities on the team
- Define expectations

2. Everyone Learns

A Smart Growth approach requires stepping outside of traditional roles and responsibilities. Transportation and land use decisions are traditionally made in a vacuum. Making transportation decisions (traditionally made by the State) and land use decisions (traditionally made by the local municipalities) together requires an education component where the decision makers (from the public to the mayor to the DOT) learn about the needs and wants of each other, and then work to find the win-win alternative. The educational process should commence at the start of the project and be a continual part of the process.

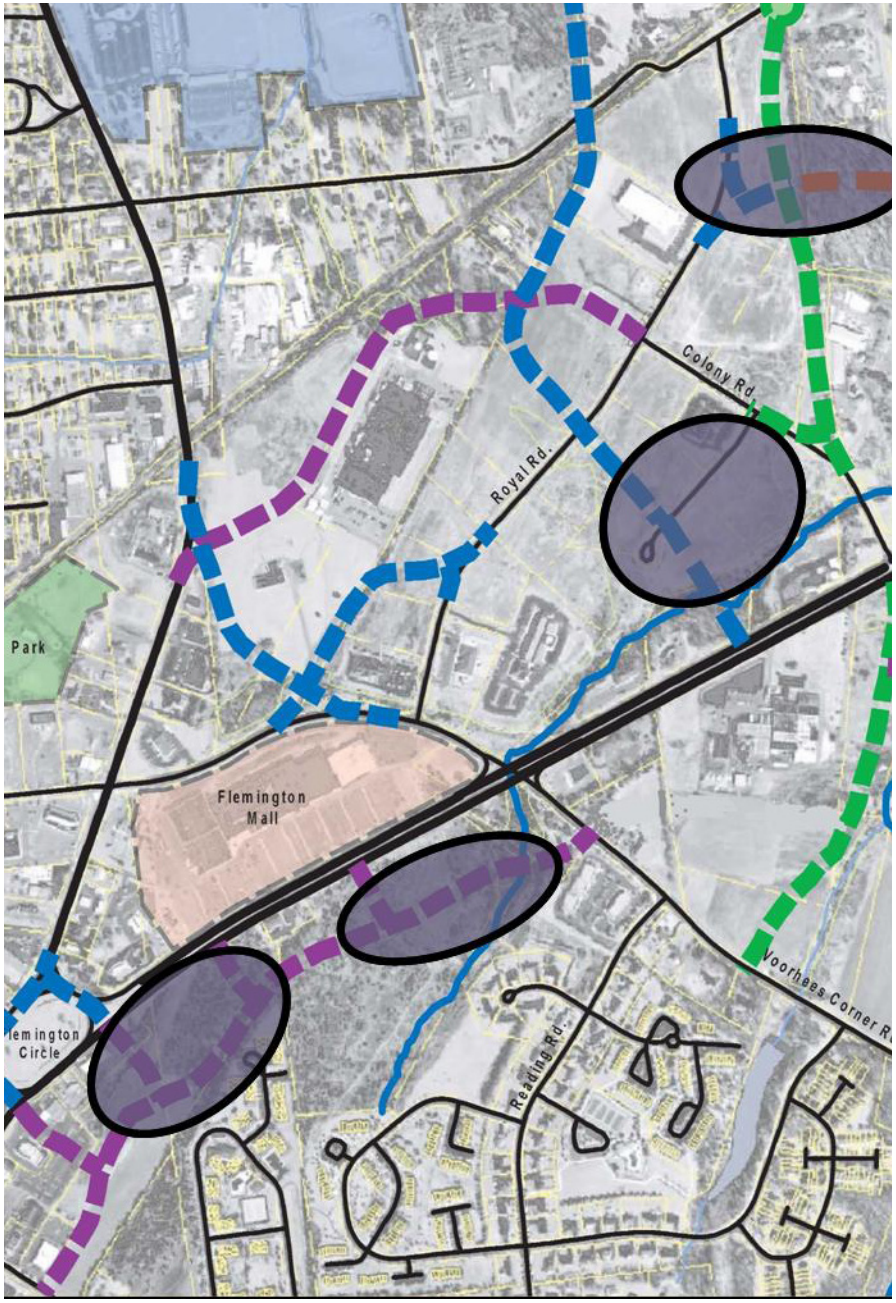
- Educate the public, municipal staff, stakeholders, developers and planning boards
- Work "one-on-one" with stakeholders
- Include active participation from the DOT Subject Matter Experts.

3. Land Use Coordination – early and often

Part of the reason for a new approach was that it was clear that there is a direct relationship between land use decisions and transportation impacts. To some degree it works in reverse. That is, our transportation decisions can affect land use decisions.

The new approach, which was including land use actively in the discussion of issues and alternatives, presented an opportunity to investigate alternative land use development which in turn affects the transportation system. The challenge is that land use and/or zoning changes take time, and involve a formal process. Future studies involving potential land use alternatives of changes should initiate discussions and land use/fiscal impacts studies, if needed, as early as possible.

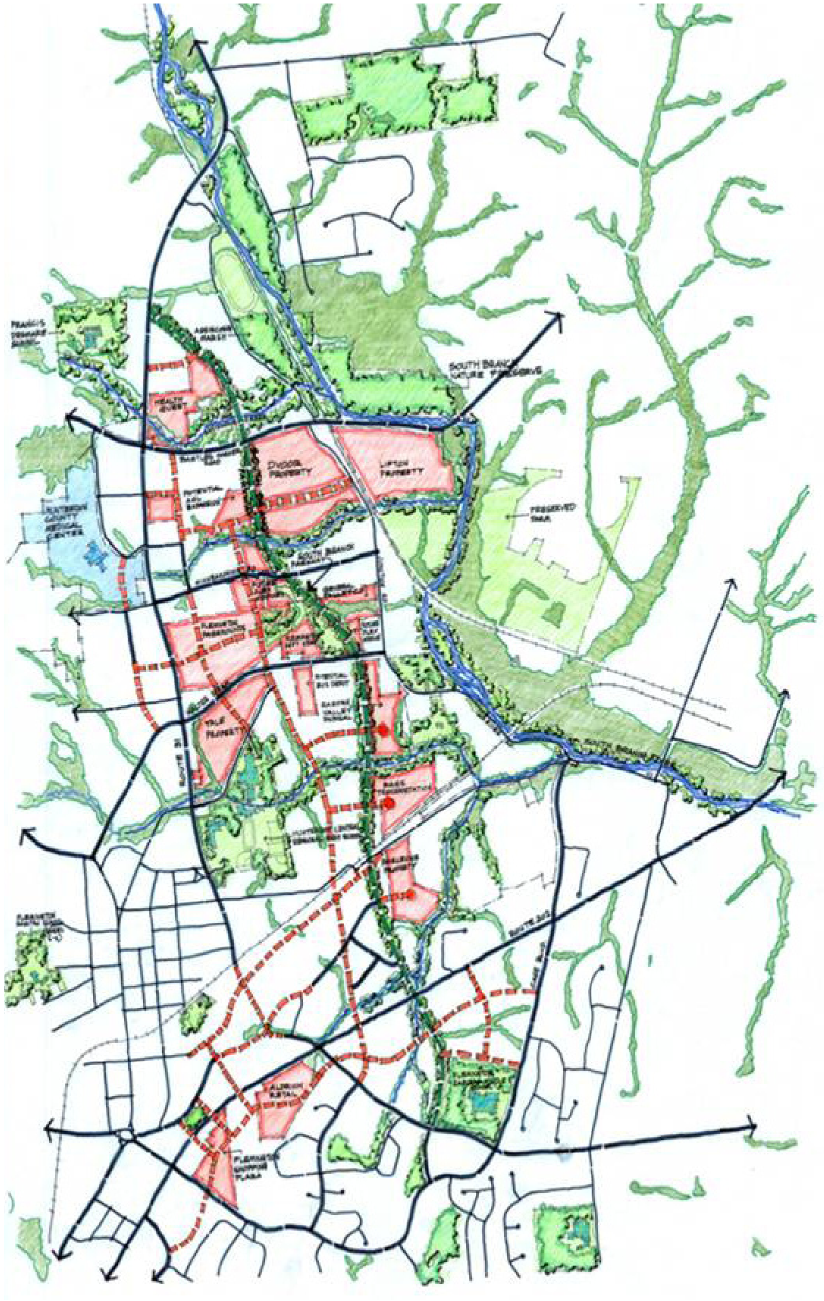
- Determine if land use changes are necessary
- Coordinate with developers: development decisions are faster than transportation decisions
- Development community requires actions/commitments
- If you want land use to be part of the solution, you cannot wait until it is part of the problem.



4. Allow the Plan to Develop Over Time

While it's important to discuss and define roles and responsibilities at the start, it's equally important to remain flexible, to allow the plan to evolve over time. The Route 31 ILUTP was developed through a number of phases where the results of one phase helped define the scope and goals of the next phase. In this manner, the community and stakeholders drive the course of the project and start to assume ownership of the project with the project team serving as technical experts.

- Revise plans as necessary
- Develop a plan that serves all interests


SOUTH BRANCH NATURE PRESERVE
HEALTH QUEST
DVOOR PROPERTY
LIPTON PROPERTY
PRESERVED FARM
HUNTERDON COUNTY MEDICAL CENTER
SOUTH BRANCH PARKWAY
POTENTIAL BUS DEPOT
YALE PROPERTY
ROUTE 31
ROUTE 202
FLEMINGTON SHOPPING PLAZA

5. Understanding the Power of the Network and Detailed Traffic Modeling

The old study results indicated that Route 31 needed to be 10 lanes wide to accommodate future development. As an alternative to widening Route 31, a 4-lane bypass was proposed. By developing a network of roads to provide alternative routes for both local and regional trips, the 4-lane bypass with grade-separated interchanges was "reduced" to a 2-lane parkway with at grade intersections.

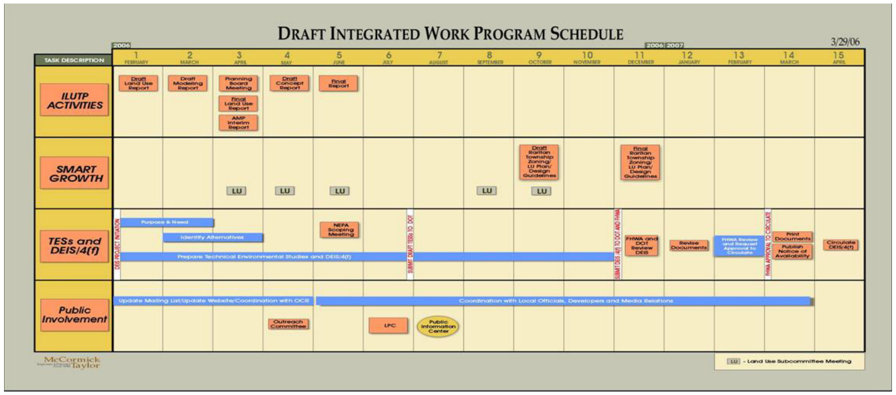
The initial belief was that it was not possible to distribute traffic in a manner to reduce the size and scope of the bypass from 4 lanes, grade separated to 2 lanes, at grade. However, an O/D study and the development of detailed traffic model allowed local professionals to feel comfortable that, if the network was built, the proposed bypass could become a scenic parkway. The ability to analyze a network of smaller roads, and variations in the network leads to support for the alternatives.

6. Develop Short but Realistic Timelines

The Route 31 Project had good periods and not so good periods. The good periods occurred when there were short, well-defined phases. This type of schedule keeps stakeholders involved, focused and helps build momentum.

The Route 31 Project also had a period or two when there was a lot of team activity, but not a lot of activity with the community. These portions of the project tended to lose momentum and interest that had been built-up during the other phases. While the work back in the office may be necessary, it should be limited to what is absolutely necessary to keep the project moving, and not be used to run excess "what if" scenarios.

- Identify the time frame and goals for each phase
- Be realistic with the timeframe
- Keeps momentum and helps avoid over analysis


DRAFT INTEGRATED WORK PROGRAM SCHEDULE
3/29/06
2006
2006 2007
TASK DESCRIPTION
1 FEBRUARY
2 MARCH
3 APRIL
4 MAY
5 JUNE
6 JULY
7 AUGUST
8 SEPTEMBER
9 OCTOBER
10 NOVEMBER
11 DECEMBER
12 JANUARY
13 FEBRUARY
14 MARCH
15 APRIL
ILUTP ACTIVITIES
Draft Land Use Report
Draft Modeling Report
Planning Board Meeting
Final Land Use Report
AMP Interim Report
Draft Concept Report
Final Report
SMART GROWTH
LU
Draft Raritan Township Zoning/ LU Plan/ Design Guidelines
Final Raritan Township Zoning/ LU Plan/ Design Guidelines
TESs and DEIS/4(f)
DEIS PROJECT INITIATION
Purpose & Need
Identify Alternatives
Prepare Technical Environmental Studies and DEIS/4(f)
NEPA Scoping Meeting
SUBMIT DRAFT TESEs TO DOT
SUBMIT DEIS /4(f) TO DOT AND FHWA
FHWA and DOT Review DEIS
Revise Documents
FHWA Review and Request Approval to Circulate
FHWA APPROVAL TO CIRCULATE
Print Documents
Publish Notice of Availability
Circulate DEIS/4(f)
Public Involvement
Update Mailing List/Update Website/Coordination with OCR
Coordination with Local Officials, Developers and Media Relations
Outreach Committee
LPC
Public Information Center
McCormick Taylor
LU - Land Use Subcommittee Meeting

Appendix A: Market and Fiscal Analysis

READING HOME
BUILT IN 1760 FOR JOHN READING, GOVERNOR OF NEW JERSEY 1757 - 1758. READING SERVED 40 YEARS ON PROVINCIAL COUNCIL.

Robert Charles Lesser & Co., LLC

April 10, 2006

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Introduction

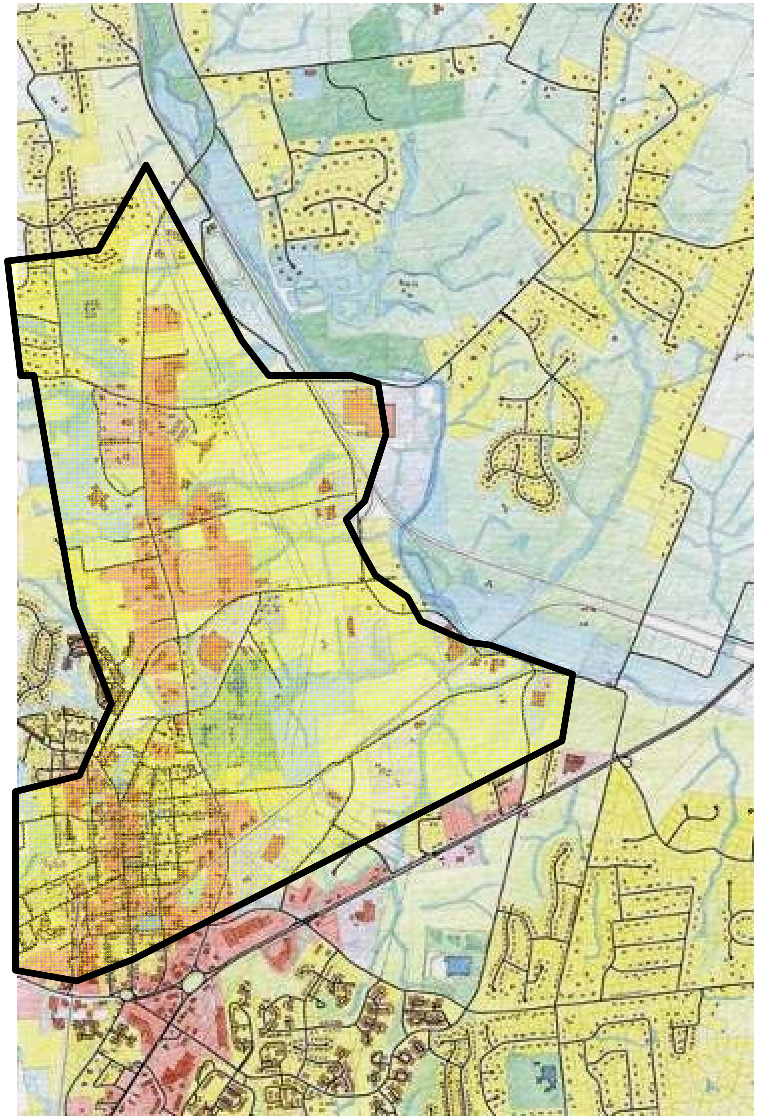
Robert Charles Lesser & Co., LLC (RCLCo) was engaged, as part of a multi-disciplinary team along with McCormick Taylor & Associates, Inc. (McCormick Taylor) and Glatting Jackson Kercher Anglin Lopez Rinehart, Inc. (Glatting Jackson), in order to assist in the development of the Route 31 Land Use and Transportation Plan. In particular, the objective of this study is to provide market and financial inputs into the Land Use Plan.

In particular, RCLCo has been responsible for the following tasks:

- The *Market Analysis* of residential, retail, office, flex and industrial land uses within the study area. The market analysis will be based upon regional and local growth trends, surveys of existing and future projects, targeted interviews with local real estate professionals, and statistical demand analyses.
- The *Fiscal Impact Analysis* for defined land uses, product types, and development programs for identified parcels. The fiscal impact analysis will identify the net fiscal impacts, based upon the expected governmental costs and tax revenues generated by new development.
- *Public Participation and Presentations* in support of the public outreach process.

The market study was completed in May, 2005. The fiscal impact analysis was completed in January, 2006.

Introduction



The **Study Area** is located in two political jurisdictions -- Raritan Township and the Borough of Flemington, both of which are located in Hunterdon County, New Jersey.

The study area is defined as the geographical area bounded by (see also the shaded area on the map to the left):

- The Route 31 corridor from the intersection with River Road (to the north) to the intersection with Route 202 and Route 12 (to the south).
- The Main Street corridor, which lies wholly in the Borough of Flemington.
- The River Road corridor (from the intersection with Route 31 to the north to the intersection with Route 202 to the south), including the entire area between Route 31 and the South Branch Raritan River

The **South Branch Parkway** is expected to run through the area between Route 31 and River Road. While we have assessed the market conditions within the study area as a whole, the findings of the market and fiscal impact analyses have primarily focused on the potential development activity on selected parcels – vacant or underutilized -- located on or near the planned bypass.

Summary of Findings

There is an opportunity to devise a growth strategy, in conjunction with the planning and construction of the South Branch Parkway, that serves market demands, creates positive fiscal impacts, does not overwhelm current governmental services, and helps meet existing and future affordable housing regulatory requirements.

- The vast majority of vacant and underutilized land along the planned South Branch Parkway is zoned for industrial uses, which creates a significant future capacity for the development of these types of uses (Page 6).
- Future projections of office, flex and industrial demand are well below the existing capacity in the study area (Pages 7 & 8).
- There is a a strong market opportunity to meet the demands of an under-served residential market, particularly with regards to a wider variety of housing types and price points (Pages 9 & 10).
- Future retail demand will be strong, but will most likely concentrate on existing retail corridors (Page 11).
- Growth and development of all types throughout the Township will create demands for affordable housing, in addition to the current back log of affordable housing units (Page 12).
- Sewer and school capacity limits are development constraints, but there is available capacity in both of these systems (Pages 13 through 15).
- The fiscal impact on the Township and school districts varies considerably by land uses (Pages 16 through 22).
- A mix of land uses within a broader development program allows fiscally positive land uses to subsidize land uses that are fiscally negative (Pages 23 through 25).
- The Township should pursue a smart growth strategy in the bypass area in order to leverage private market forces to meet a variety of public needs, including a broader range of housing options in the community, affordable housing requirements, open space and environmental wants, as well as any costs associated with future needed school and sewer capacity (Page 26).

Development Capacity in the Parcels in Play

The vast majority of vacant and underutilized land is zoned for commercial uses, which creates a significant future capacity for these types of uses.

There is nearly 7.0 million square feet of office, flex and industrial capacity in just the 16 parcels that have been identified as "parcels in play" by the Township Planner, James Humphries, and through interviews conducted as part of the framework planning process. Parcels in play are assumed to be available for development or redevelopment in the study area (particularly in the planned South Branch Parkway corridor).

Parcel	Total Acres	Percent Developable	Developable Acres	Existing Land Use	Zoning	Build-out of Current Zoning (SF)
1	68	30%	20.4	Agriculture	I-2	224,400
2	10	90%	9	Residential	I-2	99,000
3	53	0%	0	Agriculture	I-2	0
4	63	90%	56.7	Agriculture	I-2	623,700
5	13	90%	11.7	Undeveloped	I-2	128,700
6	38	50%	19	Undeveloped	I-2	209,000
7	104	50%	52	Vacant Industrial	I-2	572,000
8	37	60%	22.2	Agriculture	I-2	244,200
9	48	90%	43.2	Vacant Industrial	I-2	475,200
10	65	90%	58.5	Agriculture	I-2	643,500
11	25	90%	22.5	Residential	I-2	247,500
12	35	90%	31.5	Agriculture	I-2	346,500
13	21	90%	18.9	Agriculture	I-2	207,900
14	99	90%	89.1	Agriculture	I-2	980,100
15	76	90%	68.4	Agriculture	O-1	752,400
16	123	90%	110.7	Agriculture	O-1	1,217,700
TOTAL	878	72%	633.8			6,971,800

Note: Overall build out results in approximately a .25 FAR

If these parcels were developed according to their current zoning, Raritan Township would gain almost seven million square feet of office and industrial building space. This development capacity represents approximately *70% of the estimated existing inventory of office, flex and industrial space in the entire county* (based upon employment estimates).

Office, Flex and Industrial Market Opportunities

Future demand projections of office, flex and industrial demand are well below the existing capacity in the study area.

- Based upon employment projections, we have calculated that future annual net new demand for office, flex and industrial space over the next decade will range from 66,00 to 78,000 square feet. *Given these absorption projections, the existing by-right capacity in the parcels in play represents between 89 and 106 years of industrial, flex and office space* (see Page 8).
- These demand projections assume that the parcels in play are able to fully capture all the demand within the study area, which is not likely, especially for office space, given the availability of competitive commercial sites along Route 31, Route 202 and Main Street. Thus, the range of projections should be considered somewhat aggressive.
- The office, flex and industrial market in the study area is primarily local-serving. Office demand is driven by small professional services firms and medical office space. Flex and industrial demand is driven primarily by local-serving light manufacturing and distribution firms.
- Regional-serving office, flex and industrial tenants are more likely to locate closer to major interstates and significant population concentrations, in order to maximize access to employees and customers. One potential regional-serving niche that may develop in the study area is transportation logistics and warehousing, leveraging the access to the two rail lines that run through the study area. However, the future demand potential from this niche is highly speculative at this point.
- Local developers and brokers have indicated that there is pent-up demand for new office, flex and industrial space, particularly targeting smaller users, given difficulties delivering new space given entitlement and development constraints (including access to water and sewer). However, while recently delivered projects have successfully leased space, the pace of absorption has been relatively modest, suggesting that the overall depth of market is not supportive of larger-scale developments. This is in line with our projections of future demand.
- The relatively modest pace of absorption is a constraint on new development, as speculative development requires longer market exposure, and is therefore higher risk, and there are few if any large tenants that will pre-lease and anchor a planned building.
- There is a significant amount of vacant space available in the marketplace, but much of this is functionally obsolete and not meeting the needs of the marketplace.

Office, Flex and Industrial Market Opportunities

Future demand projections of office, flex and industrial demand are well below the existing capacity in the study area.

	Land Use					
Demand Projections	Office	Flex	Industrial	TOTAL	Capacity in the Study Area	Years of Capacity
Conservative						
Net Annual Absorption (SF), Hunterdon County	60,184	24,653	17,018	101,855		
Study Area Capture Rate	15%	25%	25%	19%		
Net Annual Absorption (SF), Study Area	9,028	6,163	4,255	19,445		
2005 Estimated Inventory (SF), Hunterdon County	2,812,751	2,441,978	5,089,905	10,344,635		
Annual Turnover	2.0%	2.0%	2.0%	2.0%		
Demand from Turnover, Hunterdon County	56,255	48,840	101,798	206,893		
Study Area Capture Rate	15%	25%	25%	22%		
Demand from Turnover, Study Area	8,438	12,210	25,450	46,098		
TOTAL ANNUAL DEMAND, STUDY AREA	17,466	18,373	29,704	65,543	6,971,800	106
Aggressive						
Net Annual Absorption (SF), Hunterdon County	83,157	39,032	39,121	161,310		
Study Area Capture Rate	15%	25%	25%	20%		
Net Annual Absorption (SF), Study Area	12,474	9,758	9,780	32,012		
2005 Estimated Inventory (SF), Hunterdon County	2,812,751	2,441,978	5,089,905	10,344,635		
Annual Turnover	2.0%	2.0%	2.0%	2.0%		
Demand from Turnover, Hunterdon County	56,255	48,840	101,798	206,893		
Study Area Capture Rate	15%	25%	25%	22%		
Demand from Turnover, Study Area	8,438	12,210	25,450	46,098		
TOTAL ANNUAL DEMAND, STUDY AREA	20,912	21,968	35,230	78,109	6,971,800	89

Note: Projected absorption by commercial land use is based upon Hunterdon County employment projections, translated into square footage by land use based upon RCLCo's statistical demand methodology. Turnover rate and capture rates are based upon RCLCo analysis of the local market, particularly the competitive characteristics of the study area relative to other existing and future commercial cores in the County.

Residential Market Opportunities

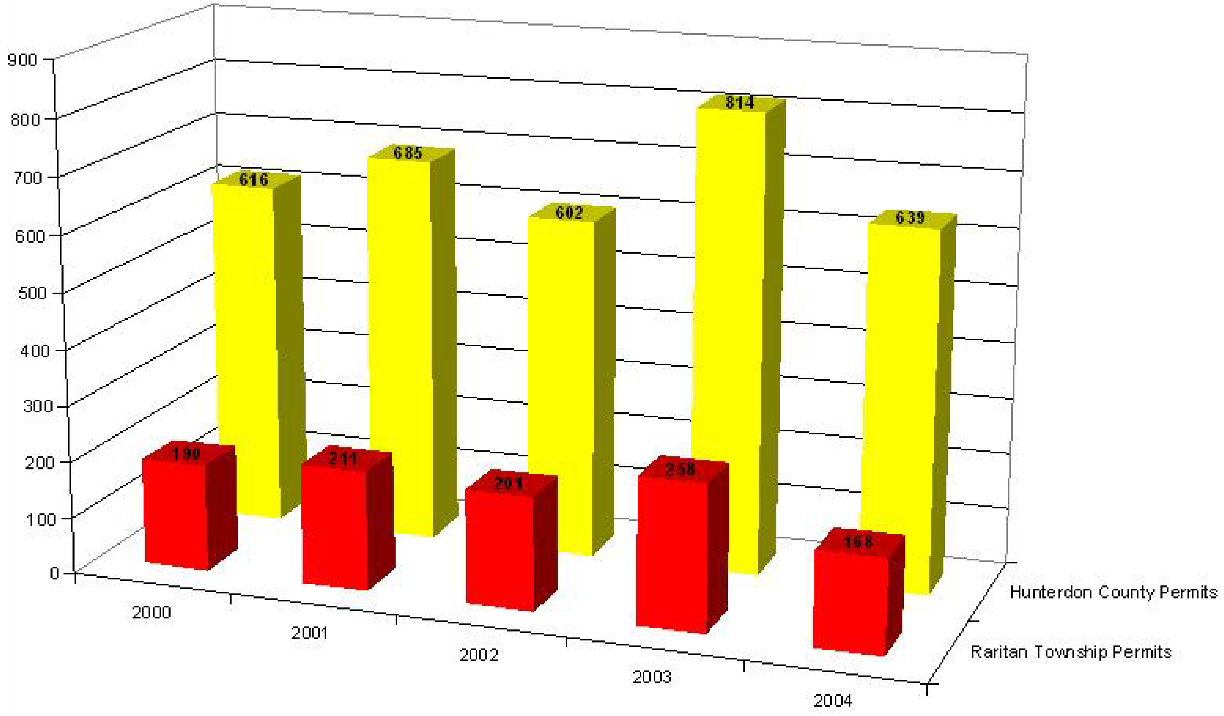
There is a a strong market opportunity to meet the demands of an under-served residential market, particularly with regards to a wider variety of housing types and price points.

- Strong demand and significant supply constraints have led to pent-up demand and strong price increases in Hunterdon County. Raritan Township is an attractive residential location, with excellent access to retail, services, jobs and other quality-of-life amenities, and the Township is already established as a high-activity new home location in the County.
- Historically, the local residential market has been dominated by larger lot, single-family detached product, but there is a strong market opportunity to offer a wider variety of product types – including, small lot detached housing, townhomes and condominiums, age-restricted housing, and seniors housing and assisted living facilities -- to meet changing market needs. A wider range of product types offer lifestyle and price alternatives for households that want to stay in the local area, but are not attracted to or can't afford the very expensive, larger lot detached product that is most prevalent today.
- Local jurisdictions have increasingly become aware that a more diverse housing market allows a community to attract and retain a wider variety of households who serve critical economic, public service and social functions. Examples of these types of households include: middle-income workers, such as retail staff, teachers, and public safety workers; young adult children and elderly parents of families; and, local empty nesters and retirees looking to move-down for lifestyle and financial reasons.
- Higher-density residential product can often be perceived as inferior to larger, detached homes; however, well-executed, higher-density residential product effectively trades private space for attractive public spaces, access to retail and services, and maintenance-free convenience. For example, traditional neighborhood design (TND) communities across the country have successfully exchanged larger lots for attractive home architecture, ample open space, and pedestrian linkages to retail and services.

Residential Market Opportunities

There is a a strong market opportunity to meet the demands of an under-served residential market, particularly with regards to a wider variety of housing types and price points.

- From a market perspective, at the very least Raritan Township should be able to achieve its recent volume of residential development activity -- approximately 200 new residential units per year from 2000 to 2004, or 31% of the residential permitting activity in the County.
- It is actually likely that potential demand will increase, as growth controls and conservation activities in other parts of the County force a greater share of demand into the study area.
- Recent permitting activity in the County and Township have been almost completely (97%) in single-family product. If a multifamily market was established, the net increase in permitting activity could range from 50 to 75 housing units per year.
- The past permitting activity reflects little activity in the age-restricted segment of the market. We project demand for 100 to 150 new age-restricted housing units per year, most of which can be added to the past volume of permitting activity.
- The total depth of future demand far exceeds the expected future capacity, thus the ability to deliver housing will not be constrained by demand.



Source: State of the Cities Data System (SOCDS), Huduser

Retail Market Opportunities

Future retail demand will be strong, but will most likely concentrate on existing retail corridors.

- The demographics in Hunterdon County, in particular the large numbers of middle-class and affluent households, are very supportive of retail development. The study area – in particular Routes 31 and 202 -- is already established as the primary community-serving retail core in the County.
- The study area will continue to be attractive to big and medium box retailers, although the future volume of large-scale retail development activity will be relatively constrained by the existing presence of most major store types and retailers, and the constrained volume of future household growth.
- Future large-scale retail development will continue to concentrate along Routes 31 and 202. The planned bypass is not a logical destination for new, larger-scale retail development. Despite what should be decent traffic counts along the bypass, retailers will want to locate among other retailers to maximize visibility and traffic, and two parallel retail corridors cannot successfully coexist.
- The market is currently under-served with regards to quality restaurants and boutique retail. The most logical location to serve this market is Flemington's Main Street, as it has existing foundation to establish itself as a more vibrant retail and restaurant experience, akin to the downtowns in Lambertville and Clinton. Reenergizing the retail along Main Street will require a concerted marketing effort, in order to effectively brand and advertise the area.
- Retail development within the parcels in play should be limited to only very small scale, local-serving retail. In particular, as part of new residential development, there may be a desire to create a small-scale retail experience serving the residents in the immediate area.
- A small-scale retail experience should be limited 6 to 8 square feet for each household in the immediate area, plus any community and public facilities. Larger, walkable retail districts as part of new residential development will compete with, and potentially cannibalize, demand that could otherwise support a revitalization of Main Street.

LINENS 'N THINGS

ROBERT CHARLES LESSER & CO., LLC
02-9441.00
April 10, 2006

Affordable Housing Requirements

Growth and development of all types throughout the Township will create demands for affordable housing, in addition to the current back log of affordable housing units.

- The New Jersey Council on Affordable Housing (COAH) requires one affordable housing unit for every eight new market-rate units. Nonresidential development requires one affordable unit for every 25 jobs created. Office development creates the most jobs per 1,000 square feet of development, and thus creates the highest affordable housing burden – one affordable unit for every 8,333 square feet of office development. The affordable unit to square footage ratio for other uses are: industrial, 1:12,500; retail, 1:25,000; and, warehousing, 1:125,000.
- As of August 2005, the housing plan calls for 153 affordable housing units from three components: 1) unmet obligation from previous development (38 units); 2) residential growth share, based on the North Jersey Transportation Planning Agency (NJTPA) projections of household growth through 2015 (28 units); and, 3) nonresidential growth share, based on NJTPA projections of employment growth through 2015 (87 units).
- According to COAH regulations, only 50% of the affordable housing requirement can be met with age-restricted housing, and 25% of the requirement must be rental units. Municipalities can also transfer up to 50% of their requirements to other municipalities within their housing region for a fee of $35,000 per unit; however, the receipt of these transfers is voluntary, so the challenge will be finding municipalities that want to take on excess affordable housing stock.
- According to their current housing plan, the Township expects to meet their affordable housing requirement through the following methods: 1) Raritan Township controls 49 age-restricted, rental units within the Flemington South Gardens that can be counted towards the requirement; 2) the Township proposes to transfer 50 units to another municipality; and, 3) the Township will construct 54 units within the Township.
- The number of affordable units that the Township must provide may change based upon actual growth, including future development activity in the study area. In order to be conservative, we have assumed that any development activity within the “parcels in play” will be in addition to the requirements listed above, and the fiscal impacts of those units (not the cost of constructing the units, but the net tax revenues and costs to the Township and school systems associated with the affordable units) will be included in our analysis. We have also assumed that the current backlog of 38 units in the Township should be accounted for within the fiscal impact analysis.

Sewer Capacity

Sewer and school capacity limits are development constraints, but there is available capacity in both of these systems.

- In order to determine the existing and future sewer capacity, we interviewed Bruce Miller, Executive Director of the Raritan Township Municipal Utilities Authority (RTMUA).
- The sewer system currently has capacity in the system. As shown on Page 14, there are 850,000 gallons per day, or approximately 22% of the 3.8 million total system capacity, that is either unused or in reserve capacity. However, most of the capacity is tied to specific sites, and is therefore is not currently available to new development.
- RTMUA strongly desires to stay at 80% of system capacity, given New Jersey Department of Environmental Protection (DEP) regulations.
- Through a process of system repairs and improvements, the sewer system also expects to recapture 500,000 gallons per day lost due to inflow and infiltration (essentially storm water flowing into the system due to cracks in the system). However, this recaptured capacity is currently slated for older neighborhoods that are in the water and sewer district but not currently hooked up.
- A $12 million dollar expansion would increase the system capacity from 3.8 to 4.4 million gallons per day. There are currently no plans to pursue an expansion of the system.
- RTMUA controls the points allocation system that determines which applicants, if any, will receive sewer rights; the details of the points allocation system can be changed at any time to meet the needs of RTMUA and the Township.
- If the political will existed to maximize the usage and efficiency of the sewer systems, there are creative means of managing unused sewer rights and designing a system of distribution. For example, a development strategy and points allocation system that provides incentives for the development of community needs, such as affordable housing, by allowing the development of uses that have high market values (in particular, residential development) would likely receive a strong market response.
- In our fiscal impact analysis, we have assumed that only 430,000 gallons per day will be available for new development, which is nearly half of the total excess capacity that could be utilized. Any development that required beyond the 430,000 gallon per day limit was assumed to require an expansion of the system, which we assumed was not an option to consider at this time

Sewer Capacity

Sewer and school capacity limits are development constraints, but there is available capacity in both of these systems.

Analysis of Usage and Capacity in the Water and Sewer System	Gallons per Day
Actual System Utilization * (3 month, July 2005 to September 2005 rolling average of gallons used per day)	2,210,000
	+
Unused Capacity (Including 292,000 GPD at the Linque site)	420,000
	+
Capacity Reservation System	430,00
TOTAL SYSTEM CAPACITY	3,060,000 Or 80.51% of System Capacity

Source: Bruce Miller, Executive Director, RTMUA

School Capacity

Sewer and school capacity limits are development constraints, but there is available capacity in both of these systems.

- Based upon an interview with Dr. Lee Seitz, Superintendent of the Hunterdon Central Regional High School, we have found that this school has capacity for 3,500 students, and the Flemington-Raritan Regional School District both has capacity for just under 4,000 students. The capacity of both school systems has been expanded recently due to the expansion of the high school and the construction of the new middle school.
- As shown in the table below, enrollment in the Hunterdon Central Regional school district is expected to flatten over the next several years, and between 2005 and 2010 the district will have capacity for over 500 new students. According to officials from the school district, these projections have accounted for known units in the residential development pipeline (236 residential units), including those in the other sending districts.
- Based upon an interview with Dr. John Farr, Superintendent of the Flemington-Raritan Regional School District, we have found that this school has future capacity from approximately 260 new students, after accounting for known future capacity in the residential development pipeline.
- This excess capacity in the two school districts is presumably available to new development in the study area.
- We have not assumed that building future school capacity to serve residential growth, regardless of the net fiscal impact, is a realistic political option at this time.
- In the fiscal impact analysis we have assumed that residential development can contribute new school children up to 95% of estimated total capacity.

			Enrollment by Grade			Excess Capacity
Year	9	10	11	12	9 -12	(Capacity = 3,500)
2005	760	757	731	644	2,892	608
2006	765	758	735	705	2,963	537
2007	749	763	736	709	2,957	543
2008	734	747	741	710	2,932	568
2009	746	732	725	715	2,918	582
2010	741	744	711	700	2,896	604

Source: Hunterdon Central Regional High School, Board of Education

Fiscal Impact by Land Use

The fiscal impact on the Township and school districts varies considerably by land uses.

- The fiscal impact model calculates the net fiscal return – the revenues versus costs – directly associated with new development. The fiscal impact of new development has been determined for the Township and the two school districts, as these entities operate independently. Yet, the combined fiscal impact should also be considered as important, as theoretically additional costs (and tax burden) in one area should be mitigated if the tax burden can be lessened in others.
- Fiscal revenues are driven primarily by property taxes, with a smaller share of the revenues coming miscellaneous revenues associated with new development (fees, fines and sources of state aid). Fiscal expenditures for the Township are generally calculated on a per resident and per employee basis, and thus the costs associated with new development are driven in great part by the number of residents and employees the new development generates. Fiscal expenditures for the school districts have been calculated on a per student basis.
- The operating cost expenditures for the Township are 11.4% higher for one resident versus one employee - $424 versus $381. The property values per resident/employee for each land use are provided in the table on Page 19. The property values per student by land use are provided in the table on Page 20; those uses which do not generate any school children – specifically age-restricted housing and nonresidential uses – contribute all the revenues generated from property values without adding any costs to the school districts
- In our analysis of the fiscal impacts by land use we did not account for the fiscal burden created by the affordable housing requirements. The impact of affordable housing requirements will be accounted for in our analysis of selected development programs (see Page 23). Still, different land uses do create differing affordable housing burdens, as shown in the table on Page 20.
- We have calculated the fiscal impact of a variety of land uses and product types, which is a useful for comparing the impacts of individual land uses against one another. Our model has compared one acre of development of each land use and product type, and therefore the density of development is taken into account. However, having more of a certain type of development of the given acre is not necessarily a positive, and can often be a negative, if the values (and therefore property taxes) of a use does not cover the cost burden, in particular the number of residents, employees and school children that are generated.
- The results of the fiscal impact analysis by land use are discussed on Pages 17 and 18, and shown in chart and table forms on Pages 21 and 22.

Fiscal Impact by Land Use

The fiscal impact on the Township and school districts varies considerably by land uses.

The fiscal impact analysis for each land use has found:

- *Single-Family Detached Housing*: Market-rate, single-family detached housing represents a positive return for the Township, but a negative return for the schools. High property values for this product type generates a significant amount of revenues for the Township, which covers the cost of the significant number of residents generated per unit. However, despite the high property values, there is a deficit with regards to the school districts. Given the low densities of development, an acre of single-family detached development creates little affordable housing burden.
- *Townhomes*: Market-rate townhomes are slightly negative to the Township, as the relatively lower values do not cover the costs associated with new residents. This land use is very positive for the schools, however, due to a low pupil generation rate, especially relative to the values. As this product type continues to evolve in the marketplace, and higher value townhomes attract even more empty nesters and young professionals, we expect the number of residents and students per household will continue to decrease, which will increase the positive fiscal impact.
- *Multifamily Housing*: Multifamily housing generates a relatively low value per unit, and thus, despite relatively low residents per household, these low values are not able to support the costs to the Township. Condominium development, which has a significantly higher value than rental apartments, is much less of a burden on the Township, and actually creates a fiscal benefit for the school districts. Rental housing suffers not only from low values, but also from a higher number of residents per household (likely driven up by families seeking affordable housing options). Given the densities, multifamily housing also creates more affordable housing requirements (per acre of development) than other housing types, which would be an additional downward pressure on the net fiscal impacts. However, over time, demographic and lifestyle forces will improve the market condition for denser housing, the property values and fiscal benefits of this product type will increase.
- *Age-Restricted Housing*: Age-restricted housing is highly positive for both the Township and the schools. The reasons is simple: high property values driven by a strong market combined with relatively lower numbers of residents per household and no school children. Higher-density, age-restricted products represent the strongest fiscal benefits, as the reduction in values per unit is mitigated by the increased number of homes developed per acre. The results of the fiscal impact analysis are quantitative evidence of some reasons why many jurisdictions view age-restricted housing as the most desirable "clean industry."

Fiscal Impact by Land Use

The fiscal impact on the Township and school districts varies considerably by land uses.

- *Affordable Housing*: Affordable housing is, in general, a fiscally negative land use for the Township and for the schools. The burden of population and school children (the pupil generation rate is even higher than for market-rate housing) is not nearly supported by the relatively lower values of the affordable units. The one exception is affordable, age-restricted homes, as they generate few new residents and no school children, and thus even with low values the fiscal impact is positive – just slightly to the Township, and more significantly to the schools.
- *Office*: Office development generates significant value per acre, and as this type of development generates no school children, it is a strong fiscal benefit to the school districts. However, this type of development is a significant burden on the Township, due to the high numbers of employees generated relative to the property values. The fiscal benefit would be further weakened if the fiscal costs associated with the affordable housing requirement was factored into this analysis.
- *Industrial/Warehouse*: Industrial development has significantly lower values than office space, and thus is not as strong a benefit to the schools as office, although it is still very much a positive land use in this regards. Yet, industrial space does generate significantly less employees, and therefore is slightly positive for the Township, despite the lower values relative to office space. Given the low rate of employee generation, industrial development also creates a significantly lower affordable housing requirement. It is important to note that manufacturing facilities generate significantly more employees with relatively low property values, and therefore industrial space that is geared more towards manufacturing than warehousing would undoubtedly be a fiscally negative use for the Township.
- *Retail and Restaurants*: Retail space is valued slightly lower than office space, but generates much fewer employees – both on a per acre (as retail is developed at a lower density than office) and per square foot basis. Retail space is therefore a fiscally positive land use for both the Township and school districts; this type of development requires relatively little affordable housing. Restaurants are the highest-value commercial use, but generate employees (and affordable housing requirements) at the same rate as office space, and the increased value can’t overcome the costs to the Township generated by the employment.
- *Flex*: Flex space is the combination of office, retail and/or industrial uses. The fiscal impact of flex space therefore depends on the mix of these uses in the building.

Fiscal Impact by Land Use

Key Fiscal Impact Inputs/Assumptions by Land use

Land Use	Estimated Value	Developmen per Acre	Total Value	Residents/Employees per HH/1,000 GSF	Total Residents/Employees	Value per Resident/Employee
Single-Family Detached (Market)	$600,000 per unit	3 units	$1,800,000	3.13 residents	9	$191,693
Townhomes (Market)	$350,000 per unit	6 units	$2,100,000	2.33 residents	14	$150,215
Condominiums (Market)	$250,000 per unit	15 units	$3,750,000	1.70 residents	26	$147,059
Rental Apartments (Market)	$185,000 per unit	20 units	$3,700,000	2.20 residents	44	$84,091
Single-Family Detached (Age-Restricted	$450,000 per unit	3 units	$1,350,000	1.60 residents	5	$281,250
Townhome (Age-Restricted)	$375,000 per unit	6 units	$2,250,000	1.40 residents	8	$267,857
Condominium (Age-Restricted)	$275,000 per unit	15 units	$4,125,000	1.20 residents	18	$229,167
Age-Restricted SFD (Affordable)	$450,000 per unit	3 units	$1,350,000	1.50 residents	5	$300,000
Single-Family Detached (Affordable)	$375,000 per unit	3 units	$1,125,000	3.13 residents	9	$119,808
Townhome (Affordable)	$275,000 per unit	6 units	$1,650,000	2.33 residents	14	$118,026
Condominium (Affordable)	$275,000 per unit	15 units	$4,125,000	1.70 residents	26	$161,765
Rental Apartments (Affordable)	$275,000 per unit	20 units	$5,500,000	2.20 residents	44	$125,000
Office	$130 per SF	11,000 SF	$1,430,000	3.0 employees	33	$43,333
Industrial	$75 per SF	11,000 SF	$825,000	0.2 employees	2	$375,000
Retail	$125 per SF	9,000 SF	$1,125,000	1.0 employees	9	$125,000
Restaurants	$140 per SF	9,000 SF	$1,260,000	3.0 employees	27	$46,667

Fiscal Impact by Land Use

Key Fiscal Impact Inputs/Assumptions by Land use

Land Use	Estimated Value	Developmen per Acre	Total Value	Pupil Generation Rate	Values per Student	Affordable Housing Required
Single-Family Detached (Market)	$600,000 per unit	3 units	$1,800,000	0.6	$1,000,000	0.4 units
Townhomes (Market)	$350,000 per unit	6 units	$2,100,000	0.2	$1,750,000	0.8 units
Condominiums (Market)	$250,000 per unit	15 units	$3,750,000	0.2	$1,250,000	1.9 units
Rental Apartments (Market)	$185,000 per unit	20 units	$3,700,000	0.2	$925,000	2.5 units
Single-Family Detached (Age-Restrict	$450,000 per unit	3 units	$1,350,000	0.0	N/A	0.4 units
Townhome (Age-Restricted)	$375,000 per unit	6 units	$2,250,000	0.0	N/A	0.8 units
Condominium (Age-Restricted)	$275,000 per unit	15 units	$4,125,000	0.0	N/A	1.9 units
Age-Restricted SFD (Affordable)	$450,000 per unit	3 units	$1,350,000	0.0	N/A	N/A
Single-Family Detached (Affordable	$375,000 per unit	3 units	$1,125,000	0.8	$468,750	N/A
Townhome (Affordable)	$275,000 per unit	6 units	$1,650,000	0.3	$916,667	N/A
Condominium (Affordable)	$275,000 per unit	15 units	$4,125,000	0.3	$916,667	N/A
Rental Apartments (Affordable)	$275,000 per unit	20 units	$5,500,000	0.3	$916,667	N/A
Office	$130 per SF	11,000 SF	$1,430,000	0.0	N/A	1.3 units
Industrial	$75 per SF	11,000 SF	$825,000	0.0	N/A	0.1 units
Retail	$125 per SF	9,000 SF	$1,125,000	0.0	N/A	0.4 units
Restaurants	$140 per SF	9,000 SF	$1,260,000	0.0	N/A	1.1 units

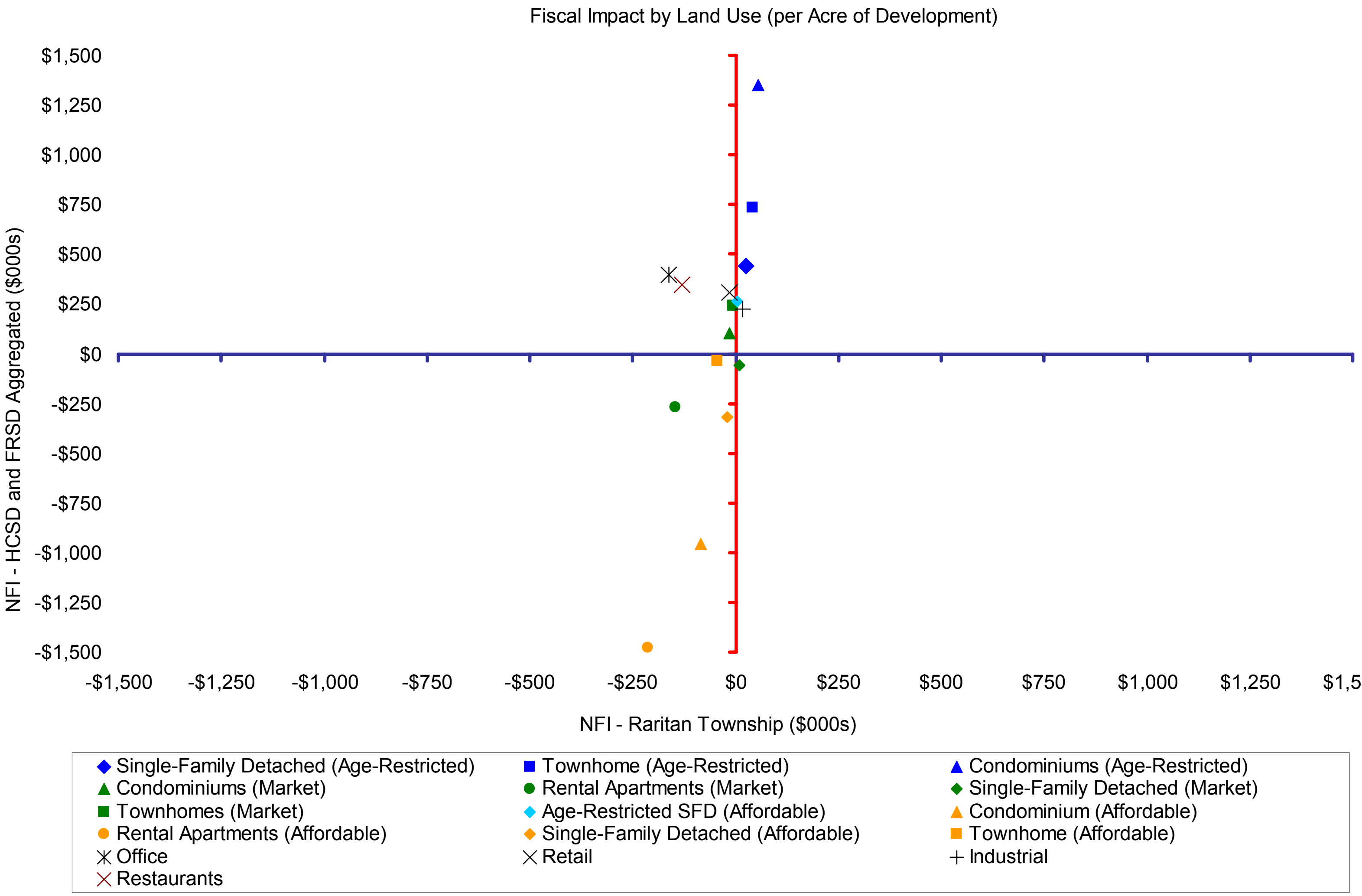
Fiscal Impact by Land Use

The fiscal impact on the Township and school districts varies considerably by land uses.

	Net Fiscal Impact per Acre of Development, 20-year Period			
Use	Township	Hunterdon Schools	Flemington-Raritan Schools	TOTAL
Single-Family Detached (Market)	$9,000	-$23,000	-$33,000	-$47,000
Townhomes (Market)	-$6,000	$75,000	$164,000	$233,000
Condominiums (Market)	-$15,000	$24,000	$81,000	$90,000
Rental Apartments (Market)	-$146,000	-$102,000	-$166,000	-$414,000
Single-Family Detached (Age-Restricted)	$26,000	$146,000	$296,000	$468,000
Townhome (Age-Restricted)	$41,000	$243,000	$494,000	$778,000
Condominium (Age-Restricted)	$56,000	$446,000	$905,000	$1,407,000
Age-Restricted SFD (Affordable)	$4,000	$88,000	$178,000	$270,000
Single-Family Detached (Affordable)	-$19,000	-$112,000	-$208,000	-$339,000
Townhome (Affordable)	-$44,000	-$16,000	-$20,000	-$80,000
Condominium (Affordable)	-$84,000	-$331,000	-$625,000	-$1,040,000
Rental Apartments (Affordable)	-$212,000	-$509,000	-$971,000	-$1,692,000
Office	-$162,000	$130,000	$264,000	$232,000
Industrial	$17,000	$75,000	$152,000	$244,000
Retail	-$16,000	$102,000	$208,000	$294,000
Restaurants	-$130,000	$115,000	$233,000	$218,000

Fiscal Impact by Land Use

The fiscal impact on the Township and school districts varies considerably by land uses.



ROBERT CHARLES LESSER & CO., LLC
02-9441.00
April 10, 2006

Fiscal Impact by Development Program

A mix of land uses within a broader development program allows fiscally positive land uses to subsidize land uses that are fiscally negative.

- Fiscal impact analyses are most useful when determining the impacts of broader development plan or program, as the total impact of that plan can be focused on rather than the individual impacts of distinct land uses. A strategy of pursuing only those land uses that individually are fiscally positive would undoubtedly ignore important market and community needs.
- In this level of fiscal impact analysis, we have accounted for the fiscal impact of the affordable housing requirement (the operating costs associated with the affordable, but not the cost of construction), and have assumed that all affordable housing burdens created by development activity in the program would need to be accommodated within the program. We have also capped development at the points where existing sewer and school capacity was used, and therefore did not assume any costs associated with capital improvements.
- We have designed four hypothetical development programs within the identified "parcels in play." These development programs are meant to represent point on a spectrum, and none likely represent an optimal development program from fiscal, market, community and social perspectives. The four programs are (a discussion of the fiscal impact results is provided on Page 24, with a summary table and chart on Page 25):
  - *Office/Industrial*: Assumes 300,000 square feet of net new office development and 900,000 square feet of industrial development. Based upon our market analysis, this is the estimated demand that can be attracted over a 20-year period, and represents only a small percentage of total capacity in the parcels in play.
  - *Multiple Use with Primary Housing*: Assumes the same amount of office and industrial development as the Office/Industrial program over the 20-year period, plus 90 single-family detached homes and 600 townhomes. The residential development activity was not limited by market demand, but instead by capacity in the schools and sewer systems.
  - *Multiple Use with Age-Restricted Housing*: Assumes the same amount of office, industrial and residential development as the Multiple Use with Primary Housing program over the 20-year period, with the exception that the housing is assumed to be all age restricted. Once again, the residential development activity was limited by capacity not demand.
  - *Multiple Use with Mixed Housing*: Assumes the same amount of office and industrial development as the previous three programs over the 20-year period, but the residential program consists of 390 single-family detached homes, and 380 townhomes, split evenly between primary and age-restricted housing.

Fiscal Impact by Development Program

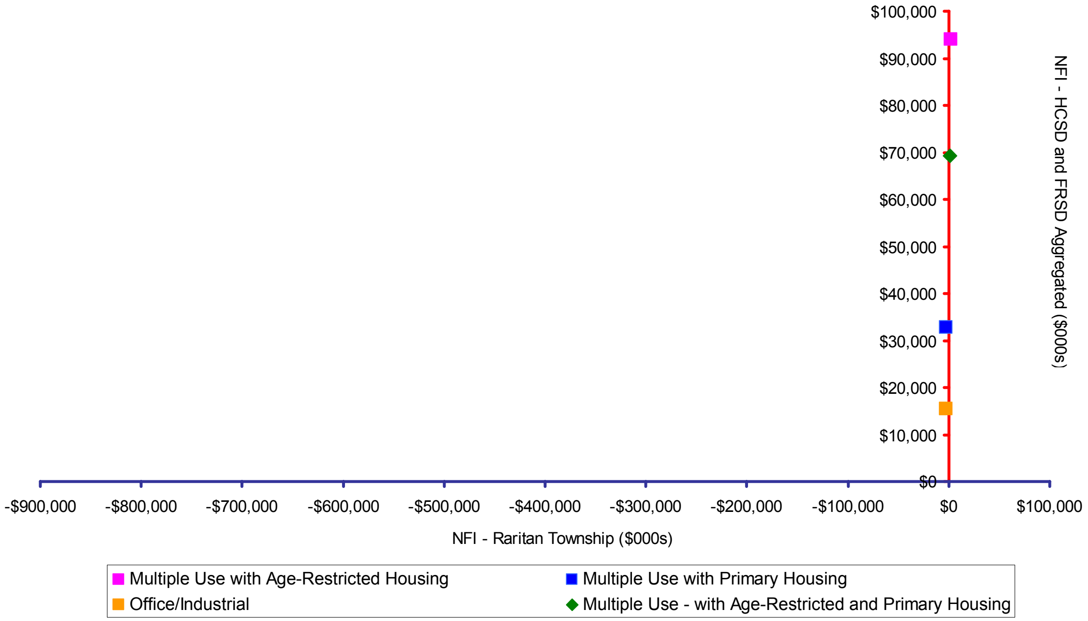
A mix of land uses within a broader development program allows fiscally positive land uses to subsidize land uses that are fiscally negative.

- All scenarios were constrained by sewer and school capacity. We have assumed that no development could occur after the current school capacity, and the 430,000 gallons per day capacity within the sewer system, were accounted for by the proposed new development. Thus, we have assumed no capital costs associated with school construction or sewer system expansion.
- *Office/Industrial*: This program results in a net fiscal impact, combined Township and schools, of just over $13.1 million over a 20-year period. Yet, when just considering the Township, the net fiscal impact is a a negative $2.3 million, given the employment generated and the relatively low values associated with office and industrial development. This program generates the need for 43 affordable housing units (in addition to the 38 backlog units in the Township, which we have assumed as part of this analysis).
- *Multiple Use with Primary Housing*: This program results in a net fiscal impact of approximately $30.1 million dollars. The large amount of townhome residential development does result in a negative fiscal impact on the on the Township, but the positive impact on schools is strong. This program generates the need for 129 affordable housing units (in addition to the 38 backlog units in the Township, which we have assumed as part of this analysis).
- *Multiple Use with Age-Restricted Housing*: This program results in a net fiscal impact of approximately $95.7 million dollars, with strong positive impact on the Township and very strong positive impacts on the schools. This program also generates the need for 129 affordable housing units (in addition to the 38 backlog units in the Township, which we have assumed as part of this analysis).
- *Multiple Use with Mixed Housing*: This program results in a net fiscal impact of approximately $70.3 million dollars, with a positive impact on the Township driven by the age-restricted housing and the increased number of single-family detached hosing, and very strong positive impacts on the schools. This program also generates the need for 140 affordable housing units (in addition to the 38 backlog units in the Township, which we have assumed as part of this analysis).
- This spectrum of development programs shows that the overall fiscal impact of a broader development plan can still be strongly positive, even if it includes elements that are fiscally negative but meet the needs of the market and community.

Fiscal Impact by Development Program

A broader development strategy can provide a mix of uses that provides positive fiscal results and meets current market needs.

	Net Fiscal Impact of Development Programs, 20-year Period			
		Hunterdon	Flemington-	
Use	Township	Schools	Raritan Schools	TOTAL
Office/Industrial	-$2,279,000	$5,019,000	$10,365,000	$13,105,000
Multiple Use with Primary Housing	-$2,641,000	$10,160,000	$22,600,000	$30,119,000
Multiple Use with Age-Restricted Housing	$1,815,000	$30,905,000	$63,015,000	$95,735,000
Multiple Use with Mixed Housing	$986,000	$22,259,000	$47,069,000	$70,314,000

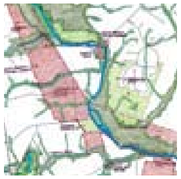
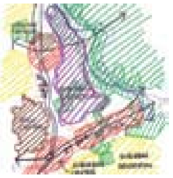
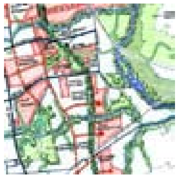


Smart Growth Strategy

The Township should pursue a Smart Growth strategy in the bypass area in order to leverage private market forces to meet a variety of public needs, including a broader range of housing choices in the community, affordable housing requirements, open space and environmental wants, as well as any costs associated with future needed school and sewer capacity.

- The status quo in the parcels in play will create a fiscal burden on the Township, and will not help Raritan Township meet its future community needs. A development strategy that incorporates a variety of land uses and product types can erase the burden to the Township, provide stronger fiscal benefits to the schools, not overwhelm existing sewer and schools capacity, and better meet the needs of the market and community – e.g., a more diverse choice of housing for new and existing residents, including housing affordable to moderate and middle-income workers and residential products that meet the needs of existing residents as they age.
- The Smart Growth development strategy is founded on the belief that the Township will be able to wield its significant negotiating leverage during the entitlements process in order to push a significant portion of the fiscal costs associated with new development back onto the private market in exchange for approvals of a wider variety of land uses that better meet the market demands. The goal is not to prohibit development, but instead create a development framework that is a “win-win” for both the public and private sectors This strategy is being successfully employed by local jurisdictions throughout the nation and state. A few examples of how this strategy could be used in the study area include:
    - Affordable housing requirements will exist even under the status quo; however, it is highly unlikely that lower-value office and industrial development can effectively subsidize affordable housing production. In contrast, residential development is much more likely to be able to fully subsidize the affordable housing requirement within approved developments, which will shift the burden of affordable housing construction from the Township to the private market. The affordable housing requirement (15% of all units affordable) is certainly in line with inclusionary zoning regulations developed in other parts of the country.
    - Maintaining open space is an important issue for the Township, and through clustering and density bonuses, private development can effectively preserve large tracts of land. This may include the construction and delivery of new park space and recreational facilities to the Township.
    - Although we have not assumed any expansions in the school or sewer systems in our analysis, the cost of such expansions could also be significantly subsidized by private capital in conjunction with larger-scale development plans.

Appendix B: Level of Service Explanation

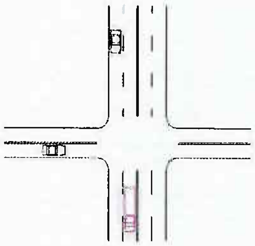




Level of Service Explanation

Level of Service (LOS) is a grading system for intersections and other transportation components (freeways, ramps, etc.). Like school, LOS A indicates the best conditions, while LOS F indicates the worst conditions. In this area, signalized intersections are the key bottleneck points that control the traffic operations of the entire corridor.

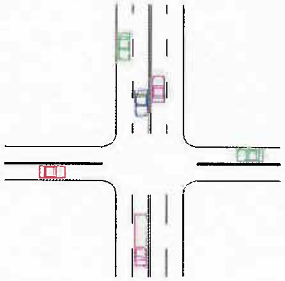
Graphical and written descriptions of level of service are shown below. The most important grade difference is between LOS E and F. At LOS E, although delays are becoming significant, queues still do not generally back-up through or affect nearby intersections. The volume is slightly under or at capacity. However, at LOS F, the demand volume exceeds capacity, and queues can and will frequently back-up through adjacent intersections.

LOS A



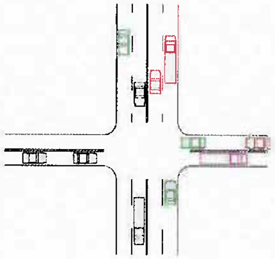
With LOS A, motorists experience virtually no delay. Most vehicles pass through the intersection without stopping. This is indicative of very low volume compared to capacity and good signal coordination

LOS B



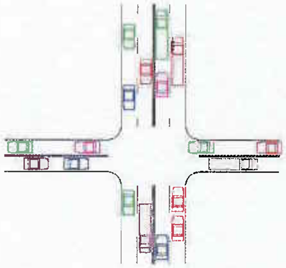
With slightly more delay than LOS A, LOS B still maintains excellent conditions. Some vehicles must stop for relatively short periods of time.

LOS C



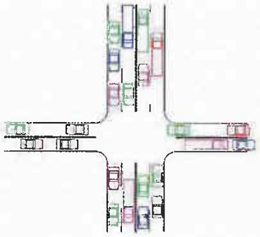
At LOS C, delays are longer than LOS B, but operations would still be considered good. Short to moderate queue lengths form during the red phase of the signal. In rare cases, a vehicle may have to wait through more than one signal cycle to proceed.

LOS D



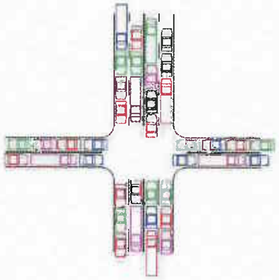
At LOS D, delays start to become more noticeable, and longer queue lengths start to become apparent at intersections. Still, the majority of vehicles have to wait no more than one signal cycle to clear the intersection..

LOS E



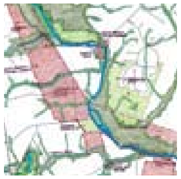
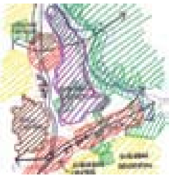
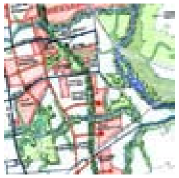
At LOS E, intersection volume now equals capacity. Nearly all vehicles have to stop, and delays are long. Many vehicles may have to wait for more than one signal cycle to proceed. However, back-ups generally do not affect nearby intersections

LOS F



Volumes exceed capacity at LOS F. Delays are extremely long, and virtually all vehicles must wait through several signal cycles to proceed. Extensive queues frequently back-up through adjacent intersections, propagating the gridlock conditions.

Appendix C: Simulation Analysis Results

Simulation Analysis Results

Intersection	Approach									
	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & Prestige Plaza			44.0	D	7.1	A	41.2	D	25.3	C
Rt 31 & Bartles Corner Rd	298.2	F	678.4	F	222.8	F	146.6	F	295.2	F
Rt 31 & Westcott Drive Exit	380.4	F	89.0	F	55.3	E	245.2	F	163.1	F
Rt 31 & Minneakoning Rd	49.0	D	91.7	F	80.6	F	48.1	D	68.5	E
Rt 31 & Walter Foran Extension	130.8	F	403.2	F	27.4	C	76.1	E	101.1	F
Rt 31 & Junction Rd	90.1	F	0.4	A	10.8	B	137.7	F	80.2	F
Rt 31 & New Jersey Ave	99.1	F	174.9	F	41.8	D	172.6	F	99.7	F
Rt 31 & Church St	52.7	D	577.7	F	36.1	D	327.1	F	220.2	F
US 202 and Church St/Voorhees Corn	42.2	D	51.1	D	131.8	F	476.3	F	239.6	F
US 202 and Case Blvd	25.7	C	243.8	F	58.3	E	1023.9	F	229.6	F
Broad Street and Church Street	8.3	A	14.4	B	19.4	C	17.0	C	14.3	B

No Build

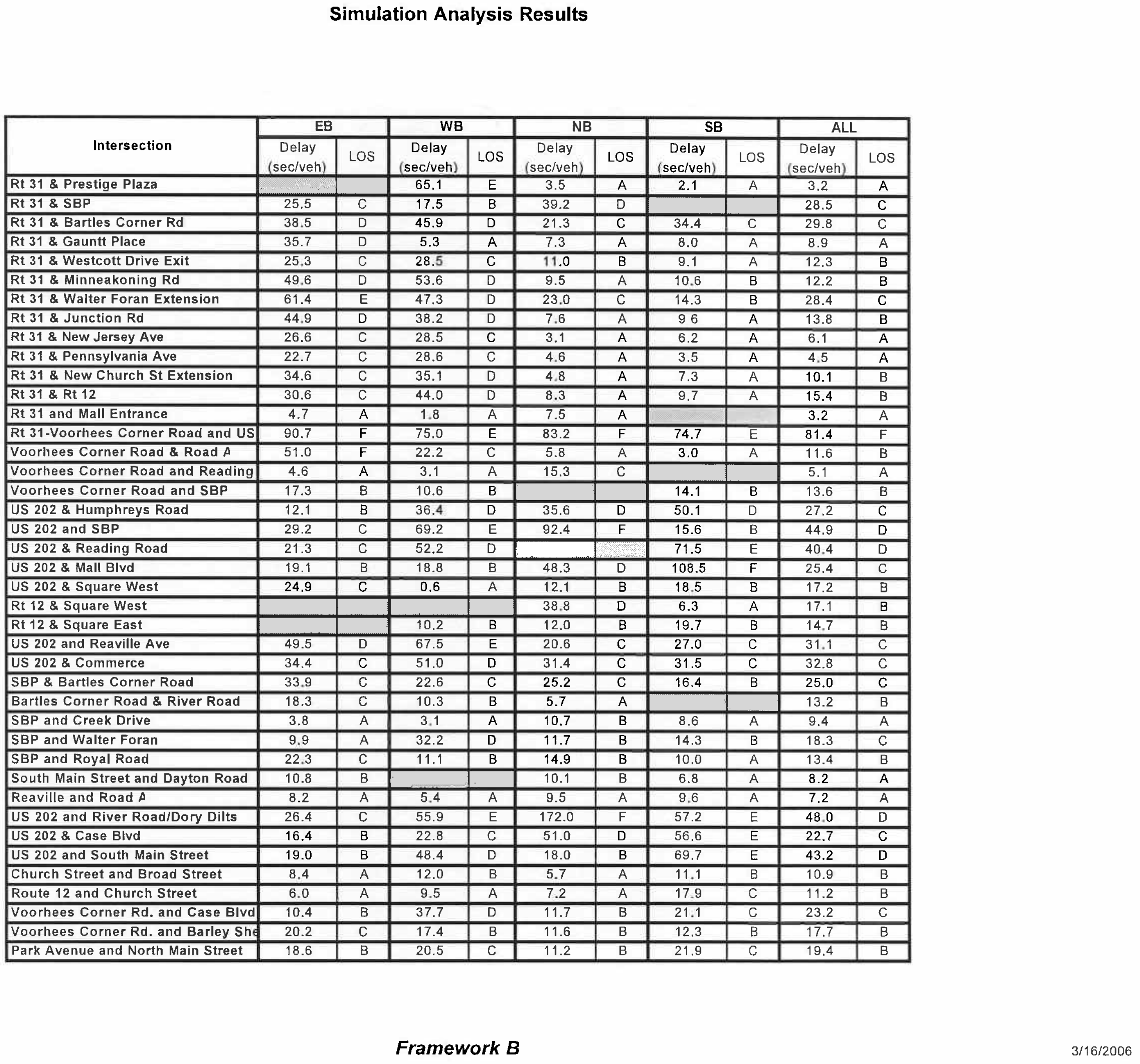
3/16/2006

Simulation Analysis Results

Intersection	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & Prestige Plaza			65.2	E	2.7	A	3.5	A	3.3	A
Rt 31 & SBP	16.5	B	16.1	B	48.4	D			24.7	C
Rt 31 & Bartles Corner Rd	34.9	C	41.5	D	19.2	B	32.1	C	27.8	C
Rt 31 & Gauntt Place	37.4	D	37.1	D	25.1	C	15.8	B	23.8	C
Rt 31 & Westcott Drive Exit	31.8	C	21.5	C	15.8	B	18.0	B	18.7	B
Rt 31 & Minneakoning Rd	46.9	D	29.8	C	12.9	B	14.8	B	14.7	B
Rt 31 & Walter Foran Extension	51.8	D	46.0	D	24.4	C	15.9	B	29.1	C
Rt 31 & Junction Rd	29.3	C	1.7	A	7.2	A	9.8	A	10.2	B
Rt 31 & New Jersey Ave	41.1	D	45.1	D	6.9	A	12.3	B	11.6	B
Rt 31 & Pennsylvania Ave	1.9	A	4.5	A	1.0	A	5.0	A	3.0	A
Rt 31 & New Church St Extension	51.1	D	36.3	D	11.7	B	8.0	A	15.2	B
Rt 31 & Rt 12	27.4	C	45.7	D	12.3	B	15.8	B	19.1	B
Rt 31 and Mall Entrance	2.2	A	2.3	A	0.9	A			2.2	A
Rt 31-Voorhees Corner Road and US 202	84.4	F	61.5	E	59.3	E	55.7	E	69.4	E
Voorhees Corner Road & Road A	5.6	A	16.4	C	1.0	A	2.5	A	2.9	A
Voorhees Corner Road and Reading Road	3.6	A	3.2	A	16.0	C			4.9	A
Voorhees Corner Road and SBP	17.2	B	10.6	B			9.2	A	12.8	B
US 202 & Humphreys Road	17.0	B	25.7	C	42.7	D	64.0	E	24.7	C
US 202 and SBP	25.1	C	39.8	D	47.8	D	48.0	D	36.3	D
US 202 & Reading Road	20.9	C	24.1	C			50.3	D	23.6	C
US 202 & Mall Blvd	22.9	C	35.0	C	65.9	E	72.7	E	32.3	C
US 202 & Square West	23.7	C			14.2	B	18.7	B	17.9	B
Rt 12 & Square West					40.7	D	6.3	A	18.3	B
Rt 12 & Square East			9.8	A	9.5	A	18.7	B	15.1	B
US 202 and Reaville Ave	51.4	D	51.7	D	16.8	B	20.4	C	24.7	C
US 202 & Commerce	32.8	C	85.3	F	25.1	C	25.6	C	29.6	C
SBP & Bartles Corner Road	79.8	E	41.6	D	54.5	D	21.6	C	52.3	D
Bartles Corner Road & River Road	27.8	D	11.9	B	2.3	A			15.1	C
SBP and Creek Drive	16.6	B	37.6	D	20.1	C	7.7	A	16.1	B
SBP and Walter Foran	11.8	B	39.4	E	20.2	C	21.3	C	25.2	D
SBP and Royal Road	15.3	C	12.9	B	14.5	B	22.1	C	17.6	C
South Main Street and Dayton Road	11.1	B			10.6	B	6.8	A	8.4	A
Reaville and Road A	9.4	A	4.6	A	10.3	B	9.9	A	7.8	A
US 202 and River Road/Dory Dilts	23.2	C	28.6	C	49.3	D	102.4	F	33.2	C
US 202 & Case Blvd	12.1	B	20.9	C	42.3	D	58.3	E	19.7	B
US 202 and South Main Street	19.7	B	50.9	D	18.5	B	69.9	E	43.9	D
Church Street and Broad Street	9.3	A	12.7	B	5.4	A	14.6	B	12.1	B
Route 12 and Church Street	22.5	C	28.0	D	15.7	C	31.4	D	25.6	D
Voorhees Corner Rd. and Case Blvd.	8.9	A	43.7	D	10.6	B	23.2	C	27.3	C
Voorhees Corner Rd. and Barley Sheaf Rd.	21.4	C	16.7	B	12.8	B	14.6	B	18.0	B
N. Main Street and Walter Foran Extension	17.6	B	7.6	A	10.8	B	16.5	B	13.0	B

Framework Plan A

3/16/2006



Simulation Analysis Results

Intersection	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & Prestige Plaza			65.1	E	3.5	A	2.1	A	3.2	A
Rt 31 & SBP	25.5	C	17.5	B	39.2	D			28.5	C
Rt 31 & Bartles Corner Rd	38.5	D	45.9	D	21.3	C	34.4	C	29.8	C
Rt 31 & Gauntt Place	35.7	D	5.3	A	7.3	A	8.0	A	8.9	A
Rt 31 & Westcott Drive Exit	25.3	C	28.5	C	11.0	B	9.1	A	12.3	B
Rt 31 & Minneakoning Rd	49.6	D	53.6	D	9.5	A	10.6	B	12.2	B
Rt 31 & Walter Foran Extension	61.4	E	47.3	D	23.0	C	14.3	B	28.4	C
Rt 31 & Junction Rd	44.9	D	38.2	D	7.6	A	9 6	A	13.8	B
Rt 31 & New Jersey Ave	26.6	C	28.5	C	3.1	A	6.2	A	6.1	A
Rt 31 & Pennsylvania Ave	22.7	C	28.6	C	4.6	A	3.5	A	4.5	A
Rt 31 & New Church St Extension	34.6	C	35.1	D	4.8	A	7.3	A	10.1	B
Rt 31 & Rt 12	30.6	C	44.0	D	8.3	A	9.7	A	15.4	B
Rt 31 and Mall Entrance	4.7	A	1.8	A	7.5	A			3.2	A
Rt 31-Voorhees Corner Road and US	90.7	F	75.0	E	83.2	F	74.7	E	81.4	F
Voorhees Corner Road & Road A	51.0	F	22.2	C	5.8	A	3.0	A	11.6	B
Voorhees Corner Road and Reading	4.6	A	3.1	A	15.3	C			5.1	A
Voorhees Corner Road and SBP	17.3	B	10.6	B			14.1	B	13.6	B
US 202 & Humphreys Road	12.1	B	36.4	D	35.6	D	50.1	D	27.2	C
US 202 and SBP	29.2	C	69.2	E	92.4	F	15.6	B	44.9	D
US 202 & Reading Road	21.3	C	52.2	D			71.5	E	40.4	D
US 202 & Mall Blvd	19.1	B	18.8	B	48.3	D	108.5	F	25.4	C
US 202 & Square West	24.9	C	0.6	A	12.1	B	18.5	B	17.2	B
Rt 12 & Square West					38.8	D	6.3	A	17.1	B
Rt 12 & Square East			10.2	B	12.0	B	19.7	B	14.7	B
US 202 and Reaville Ave	49.5	D	67.5	E	20.6	C	27.0	C	31.1	C
US 202 & Commerce	34.4	C	51.0	D	31.4	C	31.5	C	32.8	C
SBP & Bartles Corner Road	33.9	C	22.6	C	25.2	C	16.4	B	25.0	C
Bartles Corner Road & River Road	18.3	C	10.3	B	5.7	A			13.2	B
SBP and Creek Drive	3.8	A	3.1	A	10.7	B	8.6	A	9.4	A
SBP and Walter Foran	9.9	A	32.2	D	11.7	B	14.3	B	18.3	C
SBP and Royal Road	22.3	C	11.1	B	14.9	B	10.0	A	13.4	B
South Main Street and Dayton Road	10.8	B			10.1	B	6.8	A	8.2	A
Reaville and Road A	8.2	A	5.4	A	9.5	A	9.6	A	7.2	A
US 202 and River Road/Dory Dilts	26.4	C	55.9	E	172.0	F	57.2	E	48.0	D
US 202 & Case Blvd	16.4	B	22.8	C	51.0	D	56.6	E	22.7	C
US 202 and South Main Street	19.0	B	48.4	D	18.0	B	69.7	E	43.2	D
Church Street and Broad Street	8.4	A	12.0	B	5.7	A	11.1	B	10.9	B
Route 12 and Church Street	6.0	A	9.5	A	7.2	A	17.9	C	11.2	B
Voorhees Corner Rd. and Case Blvd	10.4	B	37.7	D	11.7	B	21.1	C	23.2	C
Voorhees Corner Rd. and Barley She	20.2	C	17.4	B	11.6	B	12.3	B	17.7	B
Park Avenue and North Main Street	18.6	B	20.5	C	11.2	B	21.9	C	19.4	B

Framework B

3/16/2006

Simulation Analysis Results

Intersection	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & Prestige Plaza			17.4	B	2.5	A	2.8	A	2.7	A
Rt 31 & SBP	8.5	A	17.1	B	38.3	D	5.0	A	14.0	B
Rt 31 & Bartles Corner Rd	38.1	D	44.7	D	15.9	B	27.3	C	27.7	C
Rt 31 & Gauntt Place	39.5	D			16.3	B	17.1	B	20.0	B
Rt 31 & Westcott Drive Exit	25.4	C	16.6	B	12.1	B	13.3	B	13.7	B
Rt 31 & Minneakoning Rd	49.7	D	53.2	D	15.7	B	14.6	B	17.0	B
Rt 31 & Walter Foran Extension	53.3	D	47.6	D	23.3	C	13.0	B	28.5	C
Rt 31 & Junction Rd	30.9	C	1.6	A	5.9	A	9.1	A	9.6	A
Rt 31 & New Jersey Ave	44.0	D	42.4	D	6.0	A	12.6	B	11.6	B
Rt 31 & Pennsylvania Ave	1.7	A	3.4	A	0.7	A	4.8	A	2.8	A
Rt 31 & New Church St Extension	36.4	D	26.1	C	3.9	A	5.9	A	10.3	B
Rt 31 & Rt 12	37.5	D	45.8	D	7.6	A	11.4	B	19.1	B
Rt 31 and Mall Entrance	10.1	B	2.4	A	240.0	F			19.7	C
Rt 31-Voorhees Corner Road and US	54.6	D	55.1	E	64.5	E	128.4	F	63.7	E
Voorhees Corner Road & Road A	5.7	A	15.3	C	1.4	A	3.5	A	3.6	A
Voorhees Corner Road and Reading	4.7	A	2.9	A	17.8	C			5.4	A
Voorhees Corner Road and SBP	15.9	B	10.4	B			11.7	B	12.7	B
US 202 & Humphreys Road	15.1	B	46.0	D	34.4	C	98.0	F	35.5	D
US 202 and SBP	41.9	D	77.8	E	198.3	F	15.6	B	60.8	E
US 202 & Reading Road	24.8	C	44.7	D			69.6	E	37.4	D
US 202 & Mall Blvd	17.9	B	16.8	B	51.9	D	145.3	F	25.7	C
US 202 & Square West	23.9	C	8.5	A	12.1	B	20.1	C	17.9	B
Rt 12 & Square West					40.6	D	6.2	A	17.4	B
Rt 12 & Square East			9.2	A	13.0	B	25.0	C	15.7	B
US 202 and Reaville Ave	48.1	D	45.2	D	16.2	B	20.0	B	23.3	C
US 202 & Commerce	33.2	C	54.9	D	24.8	C	18.6	B	23.8	C
SBP & Bartles Corner Road	59.6	E	32.5	C	24.7	C	25.4	C	34.0	C
Bartles Corner Road & River Road	32.3	C	22.9	C	13.9	B			26.4	C
SBP and Creek Drive	3.2	A	38.0	D	4.0	A	3.5	A	3.9	A
SBP and Minneakoning	31.7	C	15.8	B	10.8	B	11.2	B	13.8	B
SBP and Walter Foran	37.7	D	25.0	C	22.3	C	12.5	B	22.1	C
SBP and Royal Road	16.3	B	22.6	C	5.5	A	6.1	A	6.4	A
South Main Street and Dayton Road	12.7	B			11.6	B	7.1	A	8.9	A
Reaville and Road A	9.2	A	4.7	A	11.7	B	10.3	B	7.7	A
US 202 and River Road/Dory Dilts	26.6	C	30.8	C	106.2	F	46.4	D	32.5	C
US 202 & Case Blvd	14.3	B	26.1	C	49.1	D	58.4	E	23.2	C
US 202 and South Main Street	94.9	F	51.1	D	18.3	B	52.9	D	44.5	D
Church Street and Broad Street	10.3	B	16.8	B	4.8	A	16.8	B	15.0	B
Route 12 and Church Street	52.1	D	78.3	E	18.9	B	27.5	C	42.1	D
Voorhees Corner Rd. and Case Blvd	10.1	B	12.7	B	10.7	B	25.4	C	13.6	B
Voorhees Corner Rd. and Barley She	18.0	B	18.2	B	13.6	B	14.6	B	17.5	B
N. Main Street and Walter Foran Exte	23.1	C	19.0	B	11.3	B	17.7	B	16.5	B

Framework C

3/16/2006

Simulation Analysis Results

Intersection	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & Prestige Plaza			39.0	D	2.9	A	3.0	A	3.0	A
Rt 31 & SBP	13.8	B	18.1	B	48.0	D			24.6	C
Rt 31 & Bartles Corner Rd	36.7	D	43.0	D	22.4	C	30.9	C	29.3	C
Rt 31 & Gauntt Place	32.6	C	52.2	D	31.8	C	23.1	C	32.2	C
Rt 31 & Westcott Drive Exit	27.1	C	24.2	C	15.6	B	14.4	B	16.4	B
Rt 31 & Minneakoning Rd	46.9	D	47.5	D	14.3	B	13.6	B	15.0	B
Rt 31 & Walter Foran Extension	47.5	D	41.3	D	23.0	C	12.3	B	25.1	C
Rt 31 & Junction Rd	41.1	D	2.3	A	7.4	A	9.7	A	11.0	B
Rt 31 & New Jersey Ave	41.9	D	42.6	D	6.9	A	14.8	B	12.4	B
Rt 31 & Pennsylvania Ave	3.6	A	4.9	A	1.2	A	5.9	A	3.7	A
Rt 31 & New Church St Extension	38.3	D	29.5	C	6.1	A	9.0	A	11.9	B
Rt 31 & Rt 12	38.6	D	43.0	D	6.1	A	10.0	A	14.6	B
Rt 31 and Mall Entrance	12.0	B	2.5	A	154.3	F			14.8	B
Rt 31-Voorhees Corner Road and US	102.8	F	157.2	F	62.4	E	124.2	F	125.2	F
Voorhees Corner Road & Road A	27.2	D	15.9	C	1.3	A	3.0	A	6.9	A
Voorhees Corner Road and Reading	4.3	A	3.4	A	17.4	C			5.2	A
Voorhees Corner Road and SBP	15.6	B	8.7	A			9.4	A	11.6	B
US 202 & Humphreys Road	16.1	B	34.6	C	54.3	D	85.7	F	30.1	C
US 202 and SBP	40.0	D	67.4	E	51.8	D	64.7	E	55.8	E
US 202 & Mall Blvd	25.8	C	16.5	B	47.4	D	121.3	F	27.4	C
US 202 & Square West	25.8	C			12.6	B	18.0	B	17.3	B
Rt 12 & Square West					38.8	D	5.9	A	16.8	B
Rt 12 & Square East			7.7	A	20.0	B	26.4	C	15.7	B
US 202 and Reaville Ave	48.2	D	45.3	D	20.2	C	17.6	B	24.1	C
SBP & Bartles Corner Road	47.4	D	59.0	E	32.7	C	19.1	B	39.1	D
Bartles Corner Road & River Road	21.8	C	11.7	B	4.4	A			15.0	C
SBP and Creek Drive	19.8	B	35.0	C	10.1	B	10.6	B	12.0	B
SBP and Walter Foran	17.5	C	59.6	F	61.8	F	74.2	F	61.0	F
SBP and Royal Road	38.8	E	19.2	C	19.6	C	38.1	E	30.4	D
Reaville and Road A	7.9	A	3.8	A	10.2	B	10.0	A	6.5	A
US 202 & Case Blvd	19.0	B	38.6	D	59.9	E	57.5	E	32.0	C
Church Street and Broad Street	9.9	A	15.1	B	5.8	A	15.2	B	13.6	B
Route 12 and Church Street	16.1	C	18.1	C	9.5	A	42.9	E	24.1	C

Network Variation 1: Framework A without Reading Road

3/16/2006

Simulation Analysis Results

Intersection	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & New Church St Extension	35.9	D	34.1	C	4.7	A	14.3	B	13.8	B
Rt 31 & Rt 12	40.9	D	49.7	D	10.6	B	24.9	C	21.6	C
Rt 31 and Mall Entrance	15.6	C	1.6	A	18.7	C			7.2	A
Rt 31-Voorhees Corner Road and US 202	108.1	F	94.3	F	67.5	E	61.2	E	93.7	F
Voorhees Corner Road and Reading Road	3.7	A	3.4	A	16.7	C			4.9	A
Voorhees Corner Road and SBP	14.4	B	10.5	B			7.3	A	11.4	B
US 202 & Humphreys Road	12.2	B	103.7	F	40.0	D	59.8	E	60.4	E
US 202 and SBP	36.4	D	134.0	F	159.0	F	16.5	B	73.8	E
US 202 & Reading Road	24.2	C	87.5	F			275.4	F	67.8	E
US 202 & Mall Blvd	27.3	C	13.9	B			59.2	E	22.2	C
US 202 & Square West	31.8	C			16.4	B	16.5	B	18.9	B
Rt 12 & Square West					37.4	D	6.8	A	17.3	B
Rt 12 & Square East			10.6	B	9.6	A	17.3	B	14.4	B
US 202 and Reaville Ave	50.1	D	56.2	E	19.4	B	25.1	C	28.7	C
US 202 & Commerce	33.5	C	50.1	D	15.0	B	18.0	B	20.0	B
Reaville and Road A	8.0	A	4.8	A	10.7	B	6.3	A	6.6	A
US 202 and River Road/Dory Dilts	25.8	C	59.6	E	134.2	F	63.2	E	48.6	D
US 202 & Case Blvd	14.3	B	90.2	F	50.5	D	72.1	E	54.3	D
Route 12 and Church Street	6.4	A	13.9	B	6.8	A	13.7	B	11.1	B

Network Variation 2: Framework B without Road A

3/16/2006

Simulation Analysis Results

Intersection	EB		WB		NB		SB		ALL	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Rt 31 & Prestige Plaza			19.8	B	95.9	F	4.9	A	47.4	D
Rt 31 & SBP	11.0	B	17.4	B	156.7	F	6.0	A	42.0	D
Rt 31 & Bartles Corner Rd	40.0	D	52.0	D	21.4	C	31.7	C	32.8	C
Rt 31 & Gauntt Place	8.9	A			12.4	B	7.0	A	9.6	A
Rt 31 & Westcott Drive Exit	35.8	D	38.9	D	24.2	C	17.2	B	22.6	C
Rt 31 & Minneakoning Rd	48.9	D	51.2	D	16.8	B	18.6	B	19.1	B
Rt 31 & Walter Foran Extension	46.9	D	49.1	D	30.2	C	16.0	B	31.2	C
Rt 31 & Junction Rd	36.4	D	2.1	A	6.0	A	10.2	B	9.7	A
Rt 31 & New Jersey Ave	45.4	D	49.8	D	13.7	B	22.0	C	19.1	B
Rt 31 & Pennsylvania Ave	4.4	A	8.8	A	1.4	A	9.6	A	6.2	A
Rt 31 and Mall Entrance	42.2	E	1.8	A	33.1	D	42.0	E	26.5	D
Rt 31-Voorhees Corner Road and US	75.1	E	84.1	F	45.2	D	98.7	F	80.2	F
Voorhees Corner Road and Reading	4.0	A	3.0	A	19.0	C			5.0	A
Voorhees Corner Road and SBP	21.2	C	8.7	A			13.6	B	13.9	B
US 202 and SBP	65.1	E	171.8	F	95.6	F	35.3	D	101.6	F
SBP & Bartles Corner Road	43.9	D	28.0	C	23.9	C	18.0	B	26.2	C
Bartles Corner Road & River Road	26.5	D	12.9	B	3.9	A			19.5	C
SBP and Minneakoning	16.2	B	10.8	B	18.9	B	15.1	B	16.7	B
SBP and Walter Foran	27.8	C	16.7	B	24.6	C	17.2	B	20.4	C
SBP and Royal Road	11.2	B	8.3	A	8.3	A	7.3	A	8.4	A
US 202 and River Road/Dory Dilts	30.5	C	106.3	F	262.0	F	137.7	F	84.9	F
US 202 & Case Blvd	15.9	B	125.8	F	48.4	D	188.7	F	86.5	F
Church Street and Broad Street	11.5	B	10.5	B	17.9	B	17.2	B	14.7	B
Route 12 and Church Street	72.5	E	29.5	C	62.3	E	38.5	D	49.2	D
Voorhees Corner Rd. and Case Blvd.	9.3	A	35.0	C	17.1	B	30.0	C	23.1	C
Voorhees Corner Rd. and Barley She	20.1	C	16.6	B	11.7	B	15.8	B	17.7	B

Network Variation 3: No Framework Roadways

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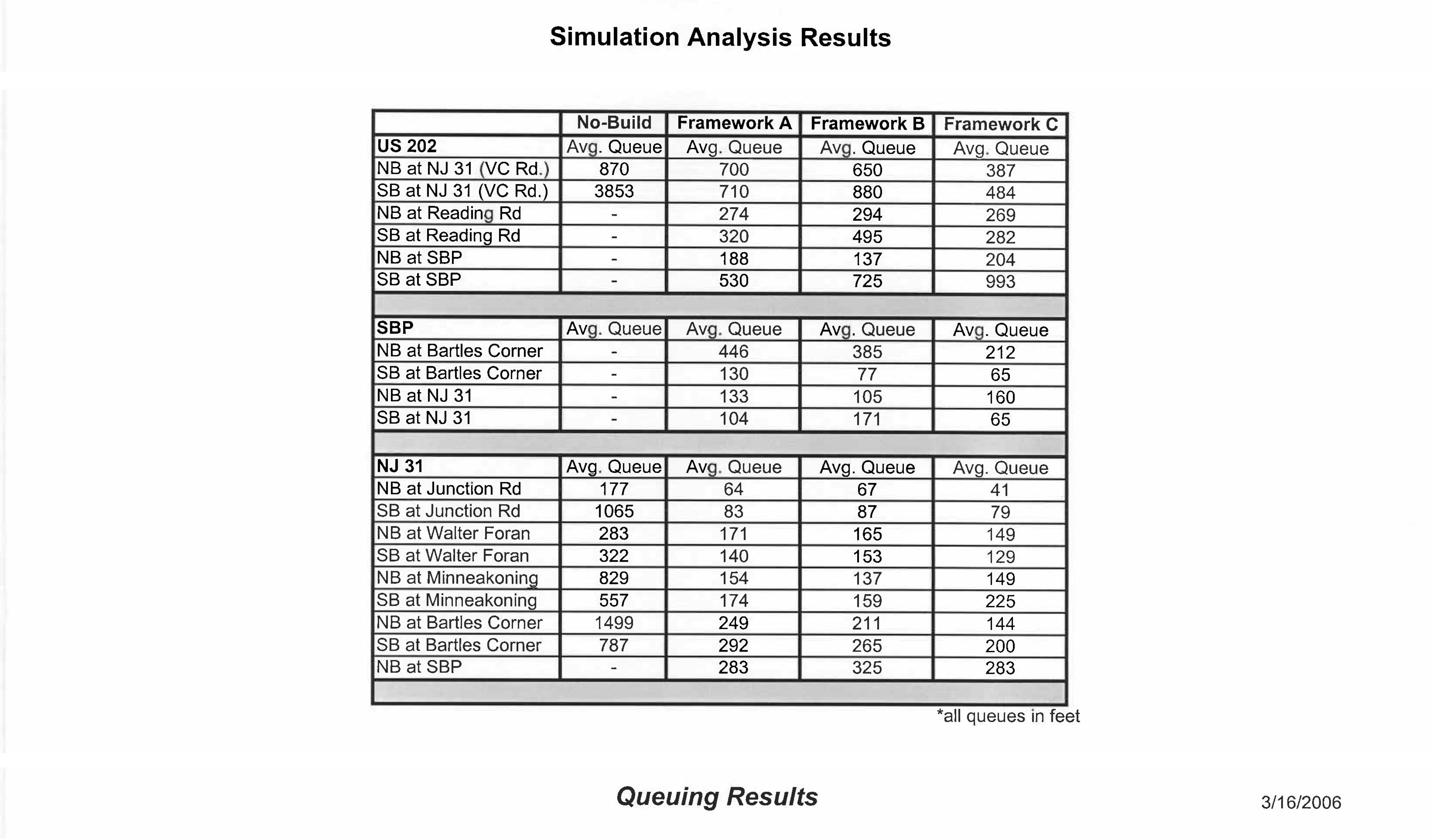

Simulation Analysis Results

	No-Build	Framework A	Framework B	Framework C
US 202	Avg. Queue	Avg. Queue	Avg. Queue	Avg. Queue
NB at NJ 31 (VC Rd.)	870	700	650	387
SB at NJ 31 (VC Rd.)	3853	710	880	484
NB at Reading Rd	-	274	294	269
SB at Reading Rd	-	320	495	282
NB at SBP	-	188	137	204
SB at SBP	-	530	725	993
SBP	Avg. Queue	Avg. Queue	Avg. Queue	Avg. Queue
NB at Bartles Corner	-	446	385	212
SB at Bartles Corner	-	130	77	65
NB at NJ 31	-	133	105	160
SB at NJ 31	-	104	171	65
NJ 31	Avg. Queue	Avg. Queue	Avg. Queue	Avg. Queue
NB at Junction Rd	177	64	67	41
SB at Junction Rd	1065	83	87	79
NB at Walter Foran	283	171	165	149
SB at Walter Foran	322	140	153	129
NB at Minneakoning	829	154	137	149
SB at Minneakoning	557	174	159	225
NB at Bartles Corner	1499	249	211	144
SB at Bartles Corner	787	292	265	200
NB at SBP	-	283	325	283

*all queues in feet

Queuing Results

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